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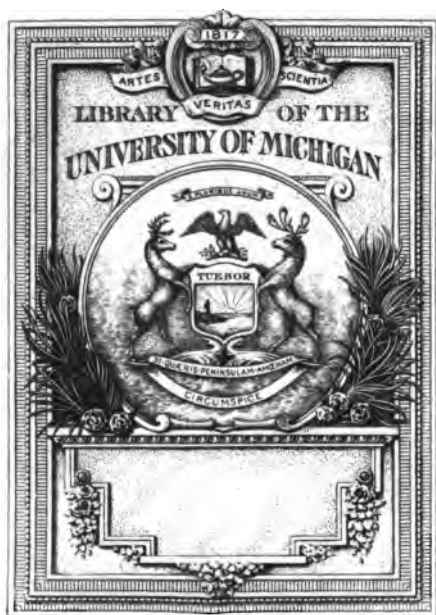
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# ROYAL GARDENS, KEW.

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## OFFICIAL GUIDE TO THE MUSEUMS OF ECONOMIC BOTANY.

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### No. 3. TIMBERS.

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*Second Edition. Revised and Augmented.*



LONDON:

**SOLD AT THE ROYAL GARDENS, KEW:**

**PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,  
BY EYRE AND SPOTTISWOODE,  
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.**

1893.

*Price Threepence.*

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1893



# GUIDE

TO THE

## MUSEUMS OF ECONOMIC BOTANY.

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The collections occupy three separate buildings within the Royal Botanic Gardens.

MUSEUM No. I. (DICOTYLEDONS and GYMNOSPERMS), overlooks the Ornamental Water, and is directly opposite to the Palm Stove.

MUSEUM No. II. (MONOCOTYLEDONS), is at the northern end of the Herbaceous Ground, three minutes walk from No. I.

MUSEUM No. III., devoted chiefly to specimens of Timber and large articles unsuited for exhibition in the glazed cases of the other museums, occupies the building formerly known as the *Orangery* at the northern extremity of the Broad Walk leading to the Ornamental Water and Palm Stove.

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### GUIDE TO MUSEUM No. III.

The *Orangery* was erected in 1761 by Sir W. Chambers for Augusta, Princess Dowager of Wales, whose monogram appears on the front of the building where it was placed by William IV.

The building is 142 feet long, 30 feet wide, and 25 feet high. The orange-trees were removed to Kensington Palace in 1841, when the gardens became a national establishment. The building was then used for large specimens of Australian and other plants of warm and temperate climates.

On the completion of the central block of the Temperate House in 1862 these were removed to that building, and the *Orangery* having completed the century of its existence as a greenhouse, finally ceased to be used for the purposes of plant cultivation.

In 1863 the large collections of colonial timbers obtained from the London International Exhibition of 1862 were arranged in it; the contents were again partially re-arranged in 1865. The building had been originally heated with hot-air

flies under the pavement, according to the fashion which obtained in the last century in horticultural buildings. This being a cause of considerable risk to the very combustible contents, the Museum was heated with hot water and the timbers again re-arranged in 1868.

Continued accessions having been received, including in 1878 the splendid collection of specimens of Indian timbers from the Indian Forest Department, the Museum became inconveniently crowded, and the contents difficult of inspection and confused. In 1883 two light iron galleries with spiral communicating staircases were erected, and the whole of the timber specimens were carefully selected from, mostly repolished, and arranged in their present approximate geographical order. Many valuable additions have since been made to the collection notably from the Colonial and Indian Exhibition of 1886.

The collection is arranged in groups according to the countries producing them, and not with any attempt at scientific classification, as in the other Museums. The name of the country to which each group belongs is placed over the woods. It must be borne in mind that most of the specimens here exhibited are duplicates of those contained in the arranged collections, where they are necessarily small to suit the shelves of the cabinets. Here their full diameter is frequently shown, and the magnitude of many of our Indian and Colonial trees become the more striking.

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## A.—EUROPE.

On entering the building at the West end the collection of European woods will be found on the back wall facing the door, under the lower gallery ; they are transverse sections, and most of them are from good sized trees.

Immediately behind the door, on the left, observe **No. 1**, portion of the base of a fine trunk of SCOTCH FIR (*Pinus sylvestris*, L) from Rothiemurchus Forest, Inverness-shire. The tree was 145 years old when felled, and was sound throughout. The Scotch fir is found all over the north and middle of Europe ; it is the only cone-bearing tree indigenous to Britain, and in its native state is confined to a few Highland forests. The largest of these is that of Rothiemurchus, where the average height of the trees is 70 feet, and their girth 4 feet

6 inches ; they are remarkable for carrying the bulk to a great height without much tapering. In the forest of Glenmore were some magnificent trees. This forest was cut down early in the present century, and realised 10,000*l*. Forty-one ships of an aggregate burden of 19,000 tons were built of its timber at the mouth of the Spey. A cross section of Scotch fir is shown on the wall over adjoining window.

Observe near the Scotch Fir the hollowed trunk of an elm tree, used as a water pipe ; laid down in the Marylebone Road by the West Middlesex Water Co. in 1817 and taken up in March 1885.

On the other side of the window near the staircase is a fine sample of CORK, the bark of *Quercus Suber*, L., from a tree grown at Sierra Morena, Estramadura, Spain. A sample of Virgin Cork, now much used for rustic garden work, is shown on the front wall over the first buttress.

**No. 2.** MAPLE (*Acer campestre*, L.), from Denmark, usually a small tree 10 to 20 feet high, and found in thickets and hedgerows in this country. It is distributed in Europe from Denmark southwards, and in West Asia. The wood is very fine and even grained, and was formerly used for bowls, spoons, and similar articles for kitchen and domestic use ; mazer bowls were often made of maple wood, and were set in silver ; it is considered one of the best woods for charcoal, the gnarled stems and knotted roots are valued by turners and cabinet makers. (See Museum No. 1, Case 24.)

**No. 3.** OAK (*Quercus Robur*, L.), from a tree 80 feet high, grown in Sweden. (See No. 7.)

**No. 4.** ELM (*Ulmus campestris*, Sm.). A tree 100 to 120 feet high, found in woods and hedgerows in this country, and extending through Mid and South Europe, North Africa, and Siberia. The wood is extremely valuable for its toughness and durability in moist situations, and was formerly much used for shipbuilding, and before the general use of iron, for water pipes. (See above.)

**No. 5.** Section from the base of a LARCH (*Larix europæa*, DC.), 126 years old, blown down at Wallington, Northumberland, in 1863. The section shows an unequal development of wood on opposite sides from the centre, the greatest expansion of the stem taking place on the side where there were fewest neighbouring trees and most branches. The Larch forms extensive woods in the mountain regions of Central Europe, ascending to an altitude of 5,000 feet or more above the sea.

The tree attains a height of 80 feet, and is grown in this country in plantations. The clear straight trunks are much used for scaffold poles. From the Larch is obtained Venice turpentine, and a substance known as Briançon manna. (See *Museum No. 1 Case 124.*)

**No. 6.** NORWAY SPRUCE (*Picea excelsa*, Link.). A tree 150 feet high. Common on all the mountain ranges of Europe, and forming extensive woods in Russia and Scandinavia. The timber is the WHITE DEAL of carpenters. The specimen exhibited is from a tree 105 feet high grown in Sweden.

**No. 7.** Very fine section of common OAK (*Quercus Robur*, L.), from Denmark, from a tree 200 years old. The Oak is one of the chief British forest trees, and forms a trunk from 60 to 100 feet high. Its distribution extends through Europe, West Asia, from the Atlas, Taurus, and Syria, almost to the Arctic Circle. Two distinct forms of the Oak are known, described as *Quercus sessiliflora*, Sm., and *Q. pedunculata*, Ehr. Oak timber is one of the strongest and most durable woods known, and before the general introduction of iron it was largely used for shipbuilding; its chief application at the present time is for furniture and building purposes. Note near the staircase a fine block of Bog Oak used for making ornamental articles, as bracelets, brooches, &c. also near staircase observe a portion of a trunk of an Oak (*Q. Robur*, L., var. *pedunculata*) from Wistman's Wood, Dartmoor. For other illustrations of Oak see **No. 3**, also *Museum No. 1, Case 108.* Observe stem of the BRUYÈRE or TREE HEATH (*Erica arborea*, L.) from South of Europe. The wood is used to make the so-called Briar Root pipes. (See *Museum No. 1, Case 65.*)

**No. 8.** Fine section of YEW (*Taxus baccata*, L.). It grows in Britain in rocky glens, hill sides, and woods from Aberdeen and Argyle southwards. It is distributed through Central and Southern Europe, and extends to North Africa, Asia Minor, the Amur district to Himalaya, ascending in Sikkim to a height of 7,000 to 10,000 feet. The Yew forms a trunk from 15 to 20 feet high, but grows very much higher in India. Yew trees of great age and size are often met with in this country. The wood is very hard and close grained, but splits readily, and is very durable, it is, moreover, very elastic and flexible, and on this account it has been used from an early period for making bows. The section here shown was grown at Syon House, Isleworth. Observe also another

specimen near staircase from the Druid's Walk, Norbury Park. (See *Museum No. 1, Case 115.*)

**No. 9. BEECH** (*Fagus sylvatica*, L.), from Denmark. It is a common forest tree in this country, and is distributed over an area between Norway, Asia Minor, and Spain, and is also found in Japan. Some remarkably fine Beech trees are scattered over different parts of this country. The wood is hard and close grained, and when well seasoned is not liable to split, consequently it is used very largely for chair making and for the best planes, handles for tools and carpentry work generally, illustrations of which will be found in *Museum No. 1, Cases 111 and 112.* Beech forms one of the best woods for fuel. (See *No. 3, Canadian Collection.*)

**No. 10. HORNBEAM** (*Carpinus Betulus*, L.), from Denmark. It is usually a small tree, but sometimes grows to a height of 70 feet, it is indigenous in the Southern counties of England, but planted in the North and in Ireland. It is distributed through Europe from Gothland southwards, and in West Asia. The wood is very tough, close grained, and durable, and is used in France for the handles of shovels, picks, mallets, and in this country for lasts. (See *Museum No. 1, Case 106.*)

**No. 11.** Section from a tree grown in the Royal Gardens, of the ORIENTAL PLANE (*Platanus orientalis*, L.), a native of Greece, Macedonia, Northern Persia, &c. The wood is prettily marked, and is used for cabinet work, turnery, &c.

Observe a section of a trunk of ELM (*Ulmus montana*, Sm.), from Denmark.

**No. 12.** Upright glass case containing trunks of the MARITIME or CLUSTER PINE (*Pinus Pinaster*, Sol., syn. *P. maritima*, Poir.), a tree 60 feet high, native of South-western Europe, in the neighbourhood of the sea coast in Spain, Portugal, Southern and Western France, and extending into Algeria, Corsica, Southern Italy, Sicily, and Greece. It yields Bordeaux turpentine, the collection of which forms one of the principal industries in the Landes of S.E. France. To obtain the turpentine the trunks are wounded by cutting off long slips of the wood on four sides, as shown in the specimens; a receptacle is formed either at the base of the trunk with sand or clay, or pieces of zinc are placed on the wounded side so as to convey the flowing turpentine into earthen vessels beneath. It is afterwards distilled. Implements used in wounding the stems and collecting the turpentine are exhibited in this case.

That which concretes on the trunk is known as Barras or Galipot. (See *Museum No. 1, Case 117.*)

## B.—ASIA.

### a. Caucasus.

**No. 1.** ZELKOVA TREE (*Zelkova crenata*, Spach., syn. *Planera Richardi*, Michx.) A native of the Caucasus, where it attains a height of from 70 to 80 feet. The sapwood is very elastic, of a light colour, and is used for similar purposes to Elm wood; the heartwood is of a reddish colour, very heavy and very hard. It takes a good polish, and is used for furniture. The specimen is from a tree which grew in the Royal Gardens, Kew.

### b. Palestine.

**No. 1.** (Left hand on entering.) Section of a branch of the celebrated Oak tree, from near Hebron, known as Abraham's Oak (*Quercus pseudo-coccifera*, Desf.). This specimen formed part of a branch that was broken off in a snowstorm in the winter of 1856-57. It was purchased by Mr. Finn, British Consul at Jerusalem and Palestine from 1845 to 1863, who had the branch cut up and conveyed to Jerusalem. Sir Joseph Hooker, in a paper on "Three Oaks of Palestine" (*Transactions of the Linnean Society*, Vol. xxiii., p. 381), says, "Owing to a superstition that any person who should cut or maim the Oak would lose his first-born son, considerable difficulty was experienced in procuring hands to saw up the timber for transportation. These were at last brought up from Jerusalem, nearly 25 miles off, and loaded seven camels with the wood of the one limb of this fine tree. This tree is popularly supposed to indicate the spot where Abraham pitched his tent, and is revered by Jews, Mahommedans, and Christians."

**No. 2.** (On back wall, opposite entrance.) Fine section of the CEDAR OF LEBANON (*Cedrus Libani*, Barr.), grown in the Royal Gardens, Kew. The tree was 113 years old when taken down, and the specimen measures 4 feet 5 inches in diameter. Sections of stems from Mount Lebanon and cones are shown in *Museum No. 1, Case 121.*

### c. Java.

**No. 1.** (In centre of end Window.) Trunk of SAGO PALM (*Metroxylon Sagu*, Rottb.) from Java, a tree 40 to 50 feet high, abundant in Sumatra and the adjacent islands and also found wild in Java, Borneo, Celebes, Siam, and Malacca. The life of the plant lasts for about 15 to 20 years, at which period it flowers and then dies. Very few fruits are formed and the seeds seldom perfected, the plant being propagated mainly by the numerous stolons. Sago is obtained from the soft central portion of the trunk which is removed, washed, the starch separated and granulated.

### d. Japan and China.

**No. 1.** (Adjoining staircase.) Note plank of CAMPHOR WOOD (*Cinnamomum Camphora*, Nees.), measuring 16 feet by 2 feet 6 inches. It is a tree about 30 feet high, but often growing to 60 feet, a native of Japan and Formosa, where it is widely diffused, extending in the latter up to an elevation of 2,000 feet in the hills. It is also common in Central China and has been introduced into the tropical and warmer temperate countries of the world. Camphor wood is used chiefly for entomological drawers and cabinets as well as for boxes and ornamental articles. By far the most important product of the tree, however, is camphor. (See *Museum No. 1, Case 87.*)

Observe in front of sixth window a small writing table made by a Chinaman in Mauritius of the wood of a CAMPHOR tree blown down in the Mauritius Botanic Garden in 1848.

In angle near staircase, note trunk of *Trachycarpus excelsa*, Wendl., from Japan, it is known as the CHINESE COIR, or HEMP PALM, from the stiff black fibre which covers the bases of the leaf stalks and stems. (See *Museum No. 2, Case 42.*)

**No. 2.** Transverse section of stem of the AILANTO (*Ailantus glandulosa*, Desf.), a lofty tree of Japan but grown in Northern India as well as in Europe as an avenue or ornamental tree. Its leaves form the food of the Ailantus silkworm of China.

**No. 3.** Transverse section of stem of YEN JU (*Sophora japonica*, L.), an ornamental tree of China and Japan, the

flower buds of which are used as a dye. This specimen is on the back wall to the right of the black case.

Between the fourth and fifth buttresses in front of the building, observe a chair and table made at Ningpo, from the wood of the FUNERAL CYPRESS (*Cupressus funebris*, Endl.)

### e. Moluccas.

In the lower gallery observe, opposite the door, a large table top of AMBOYNA WOOD. It measures 7 feet 6 inches in diameter, and was presented by Messrs. C. Hindley and Sons, 290-4, Oxford Street. The botanical source of Amboyna wood is not well known, but it is supposed to be furnished by a species of *Pterocarpus*.

### f. British North Borneo.

These woods will be found in part near the bottom of the staircase opposite the entrance door, and the remainder on the second buttress, between the first and second windows to the right on entering.

**No. 1. SELANGAN BATU.** This is a fine plank of an apparently hard and durable wood, the scientific name of which has not yet been determined.

**No. 2. RUSSOCK.** This wood has been described as the produce of *Vatica Rassak*, Blume, a large and abundant tree furnishing a hard heavy wood, very durable and used for house building, wharves, piles, and planks.

**No. 3. GREETING,** a large tree, said to be very abundant, producing a lightish coloured wood, very hard and durable both in wet and dry situations. Used for wharves, beams, and for general purposes. It is said to resist insect attacks.

**No. 4. BILLIAN** (*Eusideroxylon Zwagerii*, T. & B.). This is a very large tree belonging to the natural order *Laurineæ* producing a very hard, heavy, and close grained wood. Considered the most valuable of all the Bornean timbers. It is largely used for wharves, piles, planks, &c., and is sometimes called Borneo Iron Wood.

**No. 5. SERAYAH or WHITE CEDAR.** A very good substitute for Fir or Pine wood, used for house-building, furniture, &c.

**No. 6. KAYU KAPOR or BORNEO CAMPHOR** (*Dryobalanops aromatica*, Gært.). A tree of Sumatra and Borneo, belonging to the natural order *Dipterocarpeæ*. In the clefts of the wood are



found deposits of camphor crystals, which are harder and more brittle than ordinary Chinese Camphor. The wood is very strong, even grained, and durable and being of large size, abundant, and easily worked, is in great demand for house building, planks, &c.

**No. 7. PENAGAH or BORNEO MAHOGANY.** This is described as an abundant tree producing a seed from which is extracted a valuable oil. The wood is of a reddish colour, tough and durable, used for ships' ribs, stern posts, beams, &c. It is said to be proof against the attacks of ants, and to be procurable up to 2 feet wide, though the average size is from 15 to 18 inches.

**No. 8. MIRABOW (*Afzelia palembanica*, Baker.)** A tall, erect tree found in Borneo, Malacca, Andamans, and the Malay Islands. It produces a heavy, dark yellow coloured wood, deepening in colour with age; of a fine even grain, very tough and durable, and as it takes a good polish is much valued for furniture. Logs are obtainable  $2\frac{1}{2}$  feet diameter, and 30 feet long.

### g. British India.\*

**No. 1.** Transverse section of **TEAK (*Tectona grandis*, L.)**, a large tree of India, Java, Sumatra, and the Malay Islands. It is the chief timber of India and Burma, and is largely exported for shipbuilding and railway carriages. In India it is used for similar purposes as well as for bridges, sleepers, furniture, &c. Teak is very durable and when once properly seasoned does not split or warp. It is said not to suffer when in contact with iron and is rarely, if ever, attacked by white ants. This durability is said to be due to the presence of an aromatic oil, which is extracted from the wood in Burma and is used medicinally, as a substitute for linseed oil and as a varnish. Other specimens of teak are exhibited on the right-hand side of the Black case; they are:—**No. 2** grown at the Nilambur teak plantation, Malabar. The tree was planted in 1847 and felled in 1877, and measured 105 feet high and 8 feet 9 inches circumference at base. **No. 3** from the same plantation was planted in 1851 and felled in 1877, and measured 81 feet high and 5 feet 2 inches circumference at base. (See also No. 67.)

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\* Taking the whole of British India as covering 480 million acres, 40 millions are forest or  $\frac{1}{12}$ .

Above these specimens note transverse section of ANDAMAN REDWOOD or PADOUK (*Pterocarpus indicus*, Willd.), from the Andaman Islands, also a fine plank behind entrance door (See No. 51). In the case **No. 4** is a sideboard and two stands with vases carved in INDIAN BLACKWOOD or ROSEWOOD (*Dalbergia latifolia*, Roxb.) (See No. 26). The case also contains a specimen of EBONY (*Diospyros Ebenum*, Koenig), a large tree of Southern India and Ceylon, the wood of which is used for turnery and inlaying. (See Museum No. 1, Case 69.)

Note also boxes made of bamboo coated with lac, and wooden bowls with covers, before and after being lacquered with Thitsi (*Melanorrhæa usitata*, Wall.). Used in Burma for carrying food to monasteries and pagodas. Observe also a chest or box finely painted in gold and black and lacquered with Thitsi, used for holding palm leaf MSS.

Other woods of British India will be found on the west wall of the building on left hand of door on entering and on buttress between door and window, on right hand of entrance. On the end wall observe **No. 5** fine plank of DEODAR or INDIAN CEDAR (*Cedrus Libani*, Barr. var. *Deodara*), measuring 18 feet by 4 feet 2 inches. It is a noble tree of N. W. Himalaya at an elevation of between 4,000 and 10,000 feet, extending east to the Dauli River, a tributary of the Alaknanda below the Niti Pass, and in the mountains of Afghanistan and North Beluchistan. Gamble says, Deodar wood is the most durable of the Himalayan conifers. It is the chief timber of N. W. India and is used for all purposes of construction, for railway sleepers, bridges, and even for furniture and shingles. An oil is obtained from the wood by destructive distillation; it is dark coloured, thick, and resembles crude turpentine. It is used for anointing the inflated skins which are used for crossing rivers; and as a remedy for ulcers and eruptions, for mange in horses, and sore feet in cattle. Another specimen will be found on left hand side of the first buttress next the entrance.

**Nos. 6 & 7.** Trunks of *Corypha elata*, Roxb. A lofty palm of Bengal and Burma forming a trunk 60 to 70 feet high and 2 feet in diameter. These specimens are from the Botanic Garden, Calcutta. The spiral arrangement of the scars of the fallen leaves are in **No. 6** from left to right, while those in **No. 7** are in the opposite direction, or from right to left. The full height of **No. 7** as it grew was, clear stem 53 feet, inflorescence 12 feet, making a total of 65 feet. The diameter at the base was 2 feet 6 inches.

**No. 7a.** Trunk of a palm, probably the PALMYRA PALM (*Borassus flabelliformis*, L.) encircled by a Fig (*Ficus sp.*). Many examples of these fig-encircled palms exist in Ceylon, caused, it is said, by the seeds of the fig having been dropped by birds in the axils of the palm leaf where they have germinated, and extending their roots downwards have enclosed the palm trunk and finally reaching the ground have also taken root.

In front of this specimen, on the floor, observe a portion of a trunk of *Acacia Catechu*, Willd. A large tree common in most parts of India and Burma. The wood is extremely hard and is used for house posts and for fuel by the Irrawaddy steamers. The chief product of the tree is Cutch or Catechu obtained by boiling down the chips. (See *Museum No. 1*, Case 39.)

Trunks of INDIAN TREE FERNS are shown on the front wall of the building immediately behind the door; they are, *Alsophila glabra*, Hook., growing 15 to 20 feet high in damp forests in the sub-Himalayan tract and Eastern Bengal from Nepal down to Chittagong and Tenasserim, Central and Southern India and Ceylon; *A. gigantea*, Br., and *Hemitelia brunoniana*, C. B. Clarke, syn. *Alsophila brunoniana*, Wall., a handsome fern often 40 feet high, common in Darjeeling, in Sikkim to a height of 4,000 to 7,000 feet, and the Khasia Hills from 3,000 to 5,000 feet. This specimen was presented by the Linnean Society of London.

Note also trunk of *Alsophila crinita*, Hook., from Ceylon.

**No. 8.** An entire plant of the COCOA NUT PALM (*Cocos nucifera*, L.), which fruited for the first time in Europe at Syon House Gardens in 1863. It is widely spread in tropical countries, especially near the sea coast. It is the most important of the Palm tribe, furnishing as it does an infinite variety of products, illustrations of which may be seen in *Museum No. 2*. The wood is known in commerce as PORCUPINE WOOD, and is used in this country for walking sticks, fancy articles, and for inlaying. In India it is used for rafters and ridge poles, house posts, and other building purposes, spear handles, &c.

On the right hand of the doorway on the first projecting buttress, observe a fine slab of Indian timber, not definitely known, but probably *Pterocarpus indicus*, from the Andamans (See p. 12, No. 51, and No. 30, *Fiji Collection*). Beneath this are—

**No. 9.** MEE or ILLUPI WOOD (*Bassia longifolia*, Willd.). A large evergreen tree of South India and Ceylon. The wood

is hard, close grained, flexible, and durable, and is used for ships' keels, treenails, planking, carts, bridges, and for furniture.

For other uses of this tree See *Museum No. 1, Case 68.*

**No. 10. JAMBOLANA WOOD** (*Eugenia Jambolana*, Lam.), a large evergreen tree of India and Ceylon, and extending into the Malay Archipelago and Australia. The wood is hard and durable and is used for building purposes, agricultural implements, &c. (*See Museum No. 1, Case 50.*)

**No. 11. MAHWA WOOD** (*Bassia latifolia*, Roxb.). A large deciduous tree of the forests of Central India, and cultivated and self-sown throughout India. The wood is hard, of a reddish brown colour, and has been used in India for railway sleepers, naves of wheels, building purposes, and for furniture. The tree, however, is but rarely felled in consequence of the importance of the flowers as an article of food. (*See Museum No 1, Case 68.*)

On the point of the buttress is fixed a branching trunk of *Nannorhops ritchieana*, Wendl. and Drude, syn. *Chamærops ritchieana*, Griff., collected by Dr. Aitchison at Alizai, Kuram Valley, Afghanistan, at an elevation of 3,200 feet. The leaves of this Palm are used to make ropes and cordage, matting, fans, baskets, &c., specimens of which are exhibited in *Museum No. 2.*

On the side next the window observe a section of Indian CYPRESS WOOD (*Cupressus torulosa*, Don.), from one of the largest forests of the north-west provinces, also a section of DEODAR (*See No. 5*) and a fine slab of MAHOGANY (*Swietenia Mahagoni*, L.), grown in India, probably from the Botanic Garden, Calcutta. It is a large forest tree, native of Central America and Cuba, and is a very valuable furniture wood. A transverse section from a tree 70 years old, which grew in the Botanic Garden, Calcutta, and was destroyed in the cyclone of 1864, is shown near the staircase. (*See p. 40, No. 13 Trinidad Collection and Museum No. 1, Case 20.*)

**No. 12. TAMARIND WOOD** (*Tamarindus indica*, L.), from Ceylon. (*See No. 66.*)

In the window on right hand of entrance observe tranverse sections of CHAPLASH (*Artocarpus Chaplasha*, Roxb.). A tall deciduous tree of Eastern Bengal, Burma, and the Andaman Islands. The wood is of a yellowish brown colour, moderately hard, even grained, and durable. It is much used for canoes, and in Sikkim and Assam for planking, tea boxes, and

furniture. It gets harder and heavier with age. Near this specimen is a trunk of *Cycas circinalis*, L., from India, and nearer the door a trunk of *Cycas revoluta*, Thb., from a garden at Calcutta.

The following specimens are exhibited in one of the large central cases.

**SAFED SIRIS** (*Albizzia procera*, Benth.). A large deciduous fast growing tree of the sub-Himalayan tract from the Jumna eastwards, Bengal, Satpura Range in the Central Provinces, Guzerat, South India, and Burma. The heart wood is brown with alternate belts of darker and lighter colour, very hard, straight, and even grained, durable, and seasons well. It is used for sugar cane crushers, rice pounders, wheels, agricultural implements, bridges, and house posts, also by tea planters for stakes for laying out tea gardens, as it splits well, and for tea boxes.

**RED SANDAL WOOD or RAKTA-CHANDAN** (*Adenanthera pavonina*, L.). A deciduous tree of Bengal, South India, Burma, and Andaman Islands. The heartwood is red, hard, and close grained, and is used in South India for house-building and cabinet purposes, and also as a red dye.

Behind the entrance door note a slab of the wood of *Gluta travancorica*, Bedd. A large evergreen tree belonging to the natural order *Anacardiaceae* and found in Tinnivelly and Travancore. The wood is very little used, but its fine red colour and beautiful marking should recommend it for furniture.

In front of the staircase is a fine plank of **ANDAMAN MARBLE WOOD** (*Diospyros Kurzii*, Hiern), an evergreen tree of the Andaman Islands. This wood is handsomely marked with black and grey streaks, and is somewhat similar to Calamander wood, to which it is botanically allied. It is used in the Andamans for furniture as well as for the handles and sheathes of knives. If it were better known it might be substituted for Calamander.

Close to this specimen and in front of the Camphor wood plank is a fine branching trunk of **DATE PALM** (*Phoenix dactylifera*, L.), from Mooltan. The tree was some 30 feet high, and branched at 15 feet from the ground. It was sent to the Kew Museum by Dr. J. E. T. Aitchison, C.I.E. (See No. 2, *Algeria Collection*.)

The following woods, except a few which are indicated, are in the Galleries.

**No. 13.** *Acacia arabica*, Willd. (**Babool**). A tree sometimes growing to a large size and found probably in a wild form in Sind, Rajputana, Guzerat, and the Northern Dekkan, and cultivated or self-sown throughout the greater part of India, except in the moist humid tracts near the coast. It is a rapid growing tree in some situations in India, attaining a height of 50 to 60 feet and a girth of 6 to 8 feet in less than 30 years. It extends into Arabia, Egypt, and tropical and Southern Africa. The wood is hard and very durable if well seasoned, and is largely used for wheels, sugar, and oil presses, rice pounders, agricultural implements, tool handles, boat building, and also occasionally for railway sleepers. The bark is used for dyeing and tanning, and the gum forms East Indian Gum Arabic.

**No. 14.** *Azelia bijuga*, A. Gray (**Shoondul** or **Pynkado**). A moderate sized evergreen tree found in the Sundarbans of Bengal, Andaman Islands, and the Malay Archipelago, as well as in the Pacific Islands. The heartwood is reddish brown, very hard and close grained, and is used in the Andaman Islands for bridge and house-building, and in the Pacific for war clubs, &c.

**No. 15.** *Albizzia Julibrissin*, Durazz. (**Pink Siris**). A moderate sized deciduous tree found throughout the Himalayas from the Indus to Sikkim, ascending to 6,000 and 7,000 feet, and distributed in Abyssinia, Eastern and Central Asia, China, and Japan. The heartwood is dark brown, almost black in old trees, mottled, and shining, and is used chiefly for furniture. The specimen is from a tree 47 years old, blown down in the Calcutta Botanic Garden by the cyclone of 1864.

**No. 16.** *Albizzia odoratissima*, Benth. (**Lasrin**). A large erect tree of the sub-Himalayan tract from the Indus eastwards, ascending to 3,000 feet, also in Bengal, Burma, Central and South India. The heartwood is dark brown with darker streaks, and very hard. It is a rapid growing tree, and the wood seasons well; is fairly durable, and takes a good polish. It is used for wheels, oil mills, and furniture.

**No. 17.** *Alstonia scholaris*, R.Br. (**Chatwan**). A large evergreen tree, native of the sub-Himalayan tract from the Jumna eastwards, ascending to 3,000 feet, Bengal, Burma, South India. The wood is white, soft, even grained, seasons badly, and soon gets mouldy and discoloured. It is used for boxes, scabbards, furniture, coffins, &c., and is made into blackboards in Burma. In Darjeeling, Assam, and Cachar, it is occasionally used for tea boxes. Both wood and bark are

bitter, and are used as a tonic. The section exhibited is from a tree blown down in the Calcutta Garden by the cyclone of 1864.

**No. 18.** *Anogeissus latifolia*, Wall. (**Dhaura**). A large tree of the sub-Himalayan tract from Ravi eastwards, ascending to 3,000 feet, Central and South India. The wood is hard and smooth, the heartwood is of a purplish colour and irregularly disposed in the stem; it is highly valued on account of its great strength and toughness; it splits, however, in seasoning and is not very durable unless kept dry. It is used for axe handles, poles, furniture, agricultural implements, shipbuilding, and has been recommended for railway sleepers. The leaves are used for tanning.

**No. 19.** *Artocarpus integrifolia*, L. (**Jack Tree**). A large tree wild in the mountain forests of the Western Ghâts, ascending to 4,000 feet, cultivated throughout India, except in the northernmost part. The heartwood is of a yellow or rich yellowish brown colour, darkening on exposure, even grained, compact, and moderately hard; it seasons well and takes a good polish, and is largely used for carpentry work generally and furniture, and is sent to Europe for cabinet purposes, turnery, and backs of brushes. The wood also yields a yellow dye.

**No. 20.** *Bauhinia retusa*, Ham. (**Kural**). A moderate sized deciduous tree of N.W. Himalaya, ascending to 4,000 feet. The wood is of a reddish white colour with irregular shaped darker masses near the centre. It is not used in India, but it yields a gum similar to gum arabic and known as Semla Gum.

**No. 21.** *Cassia siamea*, Lamk. (**Beati**). A moderate sized tree of South India, Burma, and Ceylon, and distributed in the Malay Islands. The heartwood is nearly black and very hard, and often shows a beautiful mottling on a vertical section. It is "used in Burma for mallets, helves, and walking sticks. In South India it is little known, but it is considered one of the best kinds of fuel for locomotives in Ceylon." The section is from a tree blown down in the cyclone of 1864 in the Botanic Garden, Calcutta.

**No. 22.** *Cedrela Toona*, Roxb. (**Toon Tree**). A large tree of tropical Himalaya; from the Indus eastward, ascending to 3,000 feet, and in Sikkim to 7,000 feet. Its distribution extends to Java and Australia. The wood is of a brick red colour, even but open grained, and though soft does not split or warp; it is durable, and is not eaten by white ants. It is

very extensively used for all kinds of furniture as well as for door panels and carving. "In Bengal, Assam, and Burma, it grows to a very large size, trees 20 feet girth with a height of 80 to 100 feet of clear stem being not uncommon in forests which have been only little worked like those of Dumsong and in some parts of the Chittagong Hills tracts." The wood is known in the English market as Moulmein Cedar. (See No. 37 *New South Wales* and No. 8 *Queensland Collections*.)

**No. 23.** *Chickrassia tabularis*, A. Juss. (**Chittagong wood**). A large tree of Eastern Bengal, Assam, Chittagong, Burma, and South India. The heartwood varies from a yellowish brown to a reddish brown with a splendid satiny lustre, it is hard, seasons and works well. The wood is used for furniture and for carving. The specimen exhibited is a very beautiful example of this fine wood. The bark is a powerful astringent. This specimen is in the large central case.

**No. 24.** *Chloroxylon Swietenia*, DC. (**Satin Wood**). A moderate sized deciduous tree of Central and South India and Ceylon. This well known and beautiful wood is hard and takes a fine polish. It is used in India for furniture and picture frames, agricultural implements, carts, oil mills, &c., and is found to stand well under water. It is imported to England for cabinet work, backs of brushes, turnery, &c., and has been proposed for engraving as a substitute for Boxwood but has not been found suitable.

**No. 25.** *Dalbergia cultrata*, Grah. (**Yendiike**). A moderate sized tree of Burma, wood used for wheels, agricultural implements and especially for carving.

**No. 25a.** *Croton argyratus*, Bl. (**Choonoo**). A moderate sized or small evergreen tree of Martaban, Tenasserim, and the Andaman Islands. Wood yellow, hard, close, and even grained. It appears not to be used in India, but is said to be worthy of notice.

**No. 26.** *Dalbergia latifolia*, Roxb. (**Indian Blackwood or Rosewood**). A large deciduous tree of Oudh, Eastern Bengal, Central and South India. It is a valuable furniture wood and is exported to Europe from the forests of Kanara and Malabar. In India it is largely used for carving and fancy work as well as for the handles of knives, cart wheels, agricultural implements, and railway sleepers. Gamble says in his "Manual of Indian Timbers." "Nine sleepers which had been down seven to eight years on the Mysore State Railway



"were found to have, when taken up, five good, three still serviceable, and one bad." "Wood sent to London for sale in 1878, fetched 13*l.* 10*s.* per ton." (See p. 12.)

**No. 27.** *Dalbergia latifolia*, Roxb., var. *sissoides*. (**Blackwood**). A tree of the Nilghiris producing a dark coloured wood similar to the last.

**No. 28.** *Dalbergia Sissoo*, Roxb. (**Sissoo**). A large deciduous tree of the sub-Himalayan tract from the Indus to Assam, ascending to 3,000 feet. The wood is hard, close and even grained, and seasons well, the heartwood is brown with dark longitudinal veins. It is greatly valued for all purposes where strength and elasticity are required. It is unrivalled for felloes and naves of wheels, framings of carriages, boat building, agricultural implements, and for furniture. Gamble says it was formerly more extensively used for gun carriages than it can be at present owing to the comparatively small supply, and gives the following quotation regarding its strength and durability. "The wheels of our ordnance carriages have never failed, however arduous or lengthened the service has been on which they have been employed, of which no more striking example can be furnished than the campaign in Afghanistan, about the most trying country in the world for wheels. Some of our batteries served throughout the campaign, went to Baneean and even to the Hindoo Koosh and came back again to India without a breakdown, while Royal Artillery wheels built of the very best materials Woolwich could produce specially for Indian service, almost fell to pieces after few months exposure and service on the plains of India." It is much planted as an avenue tree all over India and in forest plantations in the Punjab and Bengal.

**No. 28a.** *Diospyros melanoxylon*, Roxb. (**Tendu**). A moderate sized tree, wood hard, with irregularly shaped masses of black wood in the centre, used for building, carriage shafts, fancy work, &c.

**No. 28b.** *Dipterocarpus alatus*, Roxb. (**Gurjun** or **Kanyin wood**). A very large tree of Chittagong, Burma, and the Andaman Islands. The wood is used for house-building and canoes, but is not durable. It furnishes some of the balsam known as Gurjun balsam. (See *Museum No. 1, Case 11.*)

**No. 29.** *Dipterocarpus tuberculatus*, Roxb. (**Eng**). A large deciduous tree of Chittagong and Burma. The wood is of a reddish colour and hard, and is very largely used in

Burma for house posts, canoes, &c. It yields a clear yellow resin.

**No. 30.** *Erythroxylon monogynum*, Roxb. (**Bastard Sandal**). A small tree of South India and Ceylon. The heartwood is of a dark brown colour, very hard, and takes a fine polish. The wood is used as a substitute for ordinary sandal wood. It yields an oil used for preserving native boats.

**No. 31.** *Ficus glomerata*, Roxb. (**Kathgular**). A large tree of the sub-Himalayan tract, Bengal, Central and South India, and Burma. The wood is of a greyish colour, soft and not durable, though it lasts well under water, and is consequently used for well frames. Birdlime is made from the milky juice, and the leaves, bark, and fruit are used in native medicine.

**No. 32.** *Garuga pinnata*, Roxb. (**Kharpat**). A large deciduous tree, a native of the sub-Himalayan forests from the Jumna eastwards, Central and South India, Chittagong and Burma. The heartwood is of reddish colour and moderately hard, and, notwithstanding that it seasons well, is not durable. It is occasionally used for house-building and fuel. The bark is used for tanning and the leaves for fodder.

**No. 33.** *Grewia asiatica*, L. (**Phalsa**). A small tree, native of Central India and Rajputana cultivated throughout India for its fruit. The wood is of a yellowish white colour, hard and close grained. It does not appear to be used for any special purpose. The bark is used for rope making.

**No. 34.** *Hardwickia binata*, Roxb. (**Anjan**). A deciduous tree 50 to 60, and sometimes 120, feet high. The trunk is straight and regularly shaped, native of dry forests in South and Central India, but not everywhere; generally gregarious in isolated belts or patches of greater or less extent. It is wanting in the moister forests below and above Ghat on the west side of the Peninsula. The heartwood is of a dark red colour, often of a purplish tinge, very hard and close grained. It is said to be perhaps the hardest and heaviest wood in India, very durable, liable however to split, but not to warp. It is used for bridges, house posts, and ornamental work, and has been recommended for railway work. Gamble says, "Out of nine sleepers laid down on the Mysore State Railway, and taken up after seven or eight years, six were found good, two still serviceable, and only one bad." The tree yields a gum and the bark a strong and valuable fibre. This specimen is in the large central case.

**No. 35.** *Hardwickia pinnata*, Roxb. (**Kolavu**). A very large tree of the Western Ghats from South Kanara to Travancore. The heartwood is brown, moderately hard, exuding a red sticky substance similar to Copaiba balsam. The wood is used for building by Coffee planters and others. The section is from a tree aged 55 years, blown down in the Botanic Garden, Calcutta, in the cyclone of 1864.

**No. 36.** *Hopea odorata*, Roxb. (**Thingan**). A large evergreen tree of the Eastern moist zone, scattered in evergreen forests of British Burma and the Andaman Islands. The wood is yellow or yellowish brown, hard, close and even grained. It is the chief timber tree of Southern Tenasserim, and is used for house-building, cart wheels, canoes, &c. Boats made of it are said to last 20 years. The tree yields a yellow resin which is said to be used by the Andamanese, mixed with beeswax and red ochre, to make a wax used to fasten their spear and arrow heads. This specimen is in the large central case.

**No. 37.** *Lagerstræmia Flos-Reginæ*, Retz. (**Jarul**). A large deciduous tree of Eastern Bengal, Assam, Burma, and Western Coast, cultivated for ornament all over the hotter parts of India, and even as far north as Lahore. Gamble describes the Jarul as the most valuable timber in Sylhet, Cachar, and Chittagong, and in Burma the most valuable after Teak. Its chief use is for shipbuilding, boats, and canoes. It is also used for carts and various kinds of construction. The Ordnance Department use it for many parts of their gun-carriages.

**No. 38.** *Lagerstræmia parviflora*, Roxb. var. *majuscula*, C. B. Clarke. (**Bandára**). A large tree, native of the forests of the Ghats as far north as Khandeish, Mysore, and Courtallum. The inner wood is red and moderately hard.

**No. 39.** *Mesua ferrea*, L. (**Wagesar**). A large evergreen tree of Eastern Bengal from the Monas eastward, Assam, South India, Ceylon, Burma, and the Andamans, often cultivated. The heartwood is dark red, extremely hard, and is used for building purposes, bridges, gunstocks, and tool handles. Its extreme hardness and consequent difficulty in working prevents its more general use. In Ceylon an oil is obtained from the seed. This specimen is in the large central case.

**No. 40.** *Michelia Champaca*, L. (**Champa**). A tall evergreen tree of Nepal, Bengal, Assam (ascending to 3,000 feet), Burma, and in the forests of the Western Ghats as far as Kanara. Cultivated throughout India from the Ravi south-

wards, and up to 5,400 feet in the North-west Himalaya. The wood is of a light olive brown colour, soft, but seasons well and takes a good polish. It is durable, and is used for furniture, house-building, planking, canoes, and native drums. The tree is planted at Hindoo shrines in consequence of the sweet-scented flowers.

**No. 41.** *Michelia excelsa*, Blume. (**Bara Champ**). A lofty deciduous tree of Eastern Himalaya (from 6,000 to 8,000 feet), and the Khasia Hills. The wood is soft, the heartwood of an olive brown colour, it is very durable and used for building, planking, door and window frames, as well as for furniture. It is the principal building and furniture wood of the Darjeeling Hills.

**No. 41a.** *Michelia nilagirica*, Zenk. (**Pila Champ**). A tall tree of the Western Ghats and Ceylon. The wood is fine grained, strong, and used for building.

**No. 42.** *Mimusops littoralis*, Kurz. (**Andaman Bullet wood**). A large evergreen tree of the coast forests of the Andaman Islands and Tenasserim. The wood is smooth, very hard, and close grained, and of a red colour, durable, but apt to split. It is used in the Andamans for bridges and house posts, it has also been recommended for railway sleepers. This specimen is in the large central case.

**No. 43.** *Myristica Irya*, Gaertn. (**Maloh**). A moderate sized evergreen tree of Burma, Andaman Islands, and Ceylon. It is a handsome dark olive grey wood, hard and close grained, seasons well, and takes a good polish. It seems to be but little used in India, and is worthy of more attention.

**No. 44.** *Odina Wodier*, Roxb. (**Kiamil**). A moderate sized or large deciduous tree found throughout the hotter parts of India from the extreme North-west and along the foot of the Himalaya to Assam, Burma, Tenasserim, the Andaman Islands, and Ceylon. The heartwood is light red when freshly cut, turning reddish brown on exposure, close grained and moderately hard, it seasons well, and does not warp, but is not very durable. It is used for spear shafts, scabbards, wheel spokes, cattle yokes, oil presses, and rice pounders, and might be useful for cabinet work. The bark is used for tanning, and the gum which exudes from the trunk is used for sizing paper, by weavers, and in medicine.

**No. 45.** *Ougeinia dalbergioides*, Benth. (**Sandan**). A moderate sized deciduous tree in hilly tracts of Northern India and Concan, ascending to 4,000 feet in Kumaon. The

wood is mottled, light brown, sometimes reddish brown, hard and close grained, tough and durable, and takes a good polish, used for agricultural implements, carriage poles, wheels, building purposes, furniture, &c. An astringent red gum is yielded by the tree.

**No. 46.** *Pentace burmannica*, Kurz. (**Thitko**). A very tall tree of Burma and Pegu. The wood is of a yellowish red colour, soft, and even grained, and takes a good polish. It is very largely used in Burma for boats, boxes, and similar purposes, where a light wood is required. "Large quantities are annually exported, and though a few years ago the wood was quite unknown, it is now well known even in European markets."

**No. 47.** *Pinus longifolia*, Roxb. (**Chir**). Transverse section. A large tree of Afghanistan, on the North-west Himalaya up to 7,500 feet, Sikkim and Bhotan to 4,000 feet, though not plentiful above 3,000 feet. The wood is not durable, but is readily attacked by insects and decays quickly in damp situations, nevertheless it is easily worked, and is largely used in some localities in the hills for building, shingles, tea boxes bottoms of boats, &c. The wood is often made into charcoal. The tree affords a larger quantity of resin than any other of the Himalayan pines, an ordinary tree will yield from 10 to 20 lbs. of resin the first, and about a third of this quantity in the second year, after which the tree dies or is blown down. Tar and turpentine are also obtained from it, and the bark is used for tanning, and for fuel in iron smelting.

**No. 48.** *Pinus Merkusii*, Jungh. (**Tinyu-ben**). A large tree of tropical forests of Burma on the Thoungyeen River. Gamble says, "The wood is sometimes brought into Moulmein for mast pieces, but the difficulties of land and water transport are very great, almost preventing its extraction at a profit. Splinters are extensively used for torches."

**No. 49.** *Planchonia littoralis*, Van Houtte. (**Bambway Nee**). An evergreen tree 40 to 60 feet high of the Andaman Islands. Wood reddish brown, very hard, and close grained, seasons well, and takes a fine polish. It is a valuable wood, and requires to be better known.

**No. 50.** *Prosopis spicigera*, L. (**Jhand**). A moderate sized deciduous thorny tree of the Punjab, Scinde, and Western Peninsula, also in Afghanistan and Persia. The wood is of a purplish brown colour, extremely hard and tough, but is not durable and is liable to dry rot and attacks from insects. It is

used for building purposes, carts, furniture, and agricultural implements. It is also largely used for fuel for locomotives and steamers in the Punjab and Scinde. The pods are sometimes used for food either raw or cooked, and are also given to camels.

In the top gallery along the upper part of the back wall is a specimen of a long penetrating root of the Jhand tree. It illustrates the depth to which this tree sends its tap root in search of water. Its total length is 62 feet, and it descended vertically for 11 feet when it turned at right angles, and again turning took an upward direction, when it turned over, forming a loop, and again descended for some distance.

**No. 51.** *Pterocarpus indicus*, Willd. (**Andaman Red-wood or Padouk**). A lofty tree of Burma and the Andaman Islands. The heartwood is dark red, close grained and moderately hard, used for furniture, gun carriages, carts, and numerous other purposes. The wood has been favourably reported upon for furniture by Messrs. Jackson and Graham, of London. The tree yields Kino similar to that obtained from No. 52. (See p. 12 and No. 30, *Fiji Collection*.)

**No. 52.** *Pterocarpus Marsupium*, Roxb. (**Bija or Bastard Teak**). A large deciduous tree of Central and South India, extending northwards to the Banda district of the North-western Provinces. The heartwood is brown with dark streaks, very hard and durable, seasons well, and takes a fine polish. It is much used for doors and window frames, posts, beams, furniture, agricultural implements, cart and boat-building. A red brittle gum-resin known as Malabar Kino, and used in medicine, as an astringent and colouring agent, is obtained from incisions made in the trunk. (See *Museum No. 1, Case 32*.) The round section is from a tree aged 72 years, blown down in the Botanic Garden, Calcutta, in the cyclone of 1864.

**No. 53.** *Pterocarpus santalinus*, L. fil. (**Red Sanders Wood**). A tree from 20 to 25 feet high, native of South India, chiefly in Cuddapah, North Arcot, and the southern portion of the Karnul district. The heartwood is extremely hard and of a deep red colour variegated with zones of a lighter red. It is sometimes used in India for building purposes and for tanning; its chief use, however, is as an astringent in medicine, and as a dye, for which purpose it is imported into this country from Madras. (See *Museum No. 1, Case 32*.)

**No. 54.** *Sandoricum indicum*, Cav. (**Thitto**). An evergreen tree of Burma, introduced into Southern India. The heartwood is red, moderately hard, close grained, and takes a fine polish. Used for carts and boat building.

**No. 55.** *Santalum album*, L. (**Sandalwood**). A small evergreen tree, native of the dry regions of South India. It grows naturally in the drier parts of Mysore, Coimbatore, and Salem districts, extending south to Madura and north to Kolhapúr, often at an elevation of from 2,000 to 3,000 feet. The heartwood is yellowish brown, very hard, close grained, and scented, which is due to the presence of a fragrant oil which is distilled from the wood for perfumery purposes. The wood is used for carving, for making ornamental boxes, &c., and is largely exported to China, Arabia, and to this country.

**No. 56.** *Schleichera trijuga*, Willd. (**Kosum**). A large deciduous tree of the sub-Himalayan tract from the Sutlej eastwards, Central and South India and Burma. Wood very strong and durable, used for oil, rice, and sugar mills, agricultural implements, carts, &c. The tree produces a valuable lac, the fruit is eaten, and the seeds yield an oil.

**No. 57.** *Shorea obtusa*, Wall. (**Thitya**). A large tree of Martaban, Pegu, and Tenasserim, and found also in Siam. The heartwood is dark coloured, very hard and durable, and is used for building purposes, canoes, tool handles, and planes.

**No. 58.** *Shorea robusta*, Gaertn. (**Sal**). A large gregarious tree of tropical Himalaya and along its base from Assam to the Sutlej, in the eastern districts of Central India and Western Bengal Hills. The heartwood is brown, finely streaked with dark lines, coarse and somewhat cross grained, hard, and very durable. It is the most extensively used timber of Northern India, being in constant demand for piles, beams, planking, bridges, door and window posts, gun-carriages, carts, railway sleepers, &c., and in the hills of Northern Bengal it is used for making canoes. When tapped the tree yields a large quantity of whitish aromatic resin.

**No. 58a.** *Shorea stellata*, Dyer. (**Koungmhoo**). A large evergreen tree of Burma. The wood is used for canoes and in boat building.

**No. 59.** *Shorea Talura*, Roxb. (**Talura**). A large tree of Mysore and the eastern districts of Madras. The wood is of a grey colour, smooth and very hard, much used for house-building, and is largely sent down to Madras for that purpose.

**No. 60.** *Soymida febrifuga*, A. Juss. (**Indian Red Wood**). A large deciduous tree of Central India and Dekkan. Heartwood reddish black, extremely hard and close grained, and very durable. Used for well work, plough shares, and oil mills. The bark is bitter, and is used in India as a febrifuge.

**No. 61.** *Spondias mangifera*, Pers. (**Hog Plum**). A deciduous tree of the sub-Himalayan tract, ascending to 3,000 feet in Sikkim, dry forests of South India and Burma, rare in Central India. The wood is light grey, soft, and of no value. It yields a gum somewhat like Gum Arabic. The fruit is eaten; it is also used as a pickle, preserved and made into curries.

**No. 62.** *Stephegyne parvifolia*, Korth. (**Kaddam**). A large deciduous tree of the dry forests of tropical Himalaya from the Chenab to Burma, ascending to 4,000 feet and throughout the drier parts of India to Ceylon. The wood is light pinkish brown, moderately hard, is easily worked, and takes a good polish. It is durable in dry situations, and is used for building, furniture, agricultural implements, combs, cups, spoons, platters, and turning and carving work generally.

**No. 63.** *Sterculia foetida*, L. (**Jangli badam**). A large evergreen tree of South India and Burma, found also in Ceylon, East Tropical Africa, Moluccas, and North Australia. The wood is of a light colour, soft and open grained, and apparently valueless. (See No. 88, *New South Wales Collection*.)

**No. 64.** *Stereospermum chelonoides*, DC. (**Pader**). A large deciduous tree of Bengal, Burma, Central and South India. The wood is of a grey colour, hard, elastic, easy to work, and moderately durable. It is used for house-building, furniture, and for canoes, and in Cachar for tea boxes. The roots, leaves, and flowers are used medicinally. The circular specimen is from a tree aged 64 years, destroyed by the cyclone of 1864 in the Botanic Garden, Calcutta.

**No. 65.** *Strychnos Nux-vomica*, Roxb. (**Snakewood or Nux-vomica**). A moderate sized evergreen tree of Bengal, Burma, and South India. The wood is brownish grey, hard, close grained, but is liable to split and warp. It is used in Burma for carts, agricultural implements, and fancy cabinet work. The alkaloid *Strychnia* is obtained from the seeds.

**No. 66.** *Tamarindus indica*, L. (**Tamarind**). A large evergreen tree 60 to 80 feet high, cultivated throughout India and Burma as far north as the Jhelum. The wood is



yellowish white, with irregular blotches of purplish brown heartwood, very hard and difficult to work. It is used for wheels, mallets, planes, rice pounders, oil and sugar mills, as well as for furniture. It is also an excellent wood for turning. (See No. 12.) The fruits form the Tamarinds of commerce, and the leaves are used in curries. A table made of Tamarind wood is shown in front of the sixth window.

**No. 67.** *Tectona grandis*, L. (**Teak**). See No. 1.

**No. 68.** *Terminalia belerica*, Roxb. (**Babela or Myrobalan wood**). A large deciduous tree found throughout India, common in the plains and lower hills and extending to Ceylon and Malacca. The wood is used for planking, packing cases, canoes, &c., and in the N. W. Provinces, after steeping it in water to strengthen it, for house-building. Grain measures and coffee boxes are made from it in South India. The fruits form the Beleric Myrobalans of commerce. (See Museum No. 1, Case 46.)

**No. 68a.** *Terminalia bialata*, Wall. (**Leinben**). A large tree of Burma and the Andaman Islands. The wood is beautifully mottled, and moderately hard.

**No. 69.** *Terminalia Chebula*, Retz. (**Harra**). A large deciduous tree of the sub-Himalayan tract from the Sutlej eastwards, ascending to 5,000 feet, Bengal, Assam, Chittagong, Central and South India. The wood is brownish grey with a greenish or yellowish tinge, hard, smooth, close grained, fairly durable, and seasons well. It takes a good polish, and is used for furniture, carts, agricultural implements, and house-building. The fruits are known as Chebulic or Black Myrobalans, and are exported from India in large quantities for tanning and dyeing. (See Museum No. 1, Case 46.)

**No. 70.** *Terminalia tomentosa*, W. and A. (**Saj**). A large deciduous tree of the sub-Himalayan tract from the Ravi eastwards ascending to 4,000 feet in places, Bengal, Central and South India, and Burma. The heartwood is dark brown, finely variegated, with streaks of a darker colour showing wavy or undulating lines. It is hard, seasons well, and takes a good polish. Its durability is uncertain; in Burma the heartwood decays rapidly, in North India beams are sometimes found to last well, at other times to perish from dry rot or to be eaten by insects. The wood, however, is largely used for house-building, carts, rice pounders, ship and boat-building, and it has also been tried for railway sleepers. The bark is used for tanning and for dyeing black.

**No. 71.** *Ulmus integrifolia*, Roxb. (**Pápri**). A large deciduous tree of the sub-Himalayan tract from the Beas eastwards, Central and Southern India. The wood is of a light yellowish grey and moderately hard; it is used for house-building, carts, carving, &c. The seeds yield an oil. The section is from a tree destroyed by the cyclone of 1864 in the Botanic Garden, Calcutta.

**No. 72.** *Vateria indica*, L. (**Piney Varnish or Indian Copal Tree**). A large evergreen tree of the Western Ghats from Kanara to Travancore, ascending to 4,000 feet. The heartwood is grey, rough, moderately hard, and porous. The wood is not in much request, but is occasionally used for canoes, the masts of native vessels, and for coffins. A good hard resin very similar to copal is exuded from the tree.

**No. 73.** *Wrightia tinctoria*, R. Br. (**Dadhi**). A small deciduous tree of Rajputana, Central and South India. The wood is white, moderately hard, and close grained, used for turning and carving. The tree yields a milky juice.

**No. 74.** *Xylocarpus dolabriformis*, Benth. (**Ironwood of Pegu and Arracan**). A large deciduous tree of the Chanda district, South India, Arracan, and Burma. The heartwood is dark brown or reddish brown, beautifully mottled, extremely hard, and takes a good polish; it is very durable, due probably to the resin which it contains, and this resin is more abundant in the Burmese wood than in that grown in South India. The wood is used for boat building, agricultural implements, carts, and tool handles. In South India it is used for railway sleepers, posts, boat-building, &c., and in Burma and Bengal it is largely used for telegraph posts; also for piles and beams for bridges.

The following specimens of Indian Bamboos are exhibited: namely, along the front of the upper gallery is a fine stem, 86 feet long, of **Wabo** (*Bambusa Brandisii*, Munro). This species, which grows in Chittagong and Burma, attains 120 feet high, with stems often 30 inches in circumference. On the front wall over the windows, commencing at the top, are the following:—**Kyathongwa** (*Bambusa polymorpha*, Munro), from Pegu. **Tenwa** (*Cephalostachyum pergracile*, Munro), from Burma. **Wapyu** (*Oxytenanthera albociliata*, Munro), from Burma, and **Myinwa** (*Dendrocalamus strictus*, Nees.), from Pegu. The stems of this last-named species are very strong and elastic, nearly solid, and are used for spear-handles, building purposes generally, and for basket work. They grow

to a height of 50 or even 100 feet. In front of the western staircase observe a stem of **Palami-Pinau-Wa** (*Bambusa nana* Roxb.) from Pegu.

## C.—AFRICA.

### a. Seychelles and Mauritius.

**No. 1.** Case containing the bowl-like base of the stem of the **DOUBLE COCOA NUT** or **COCO DE MER** (*Lodoicea sechellarum*, Lab.), a palm 50 to 100 feet high, peculiar to the Seychelle Islands. The holes seen inside are the places of origin of the roots, the softer parts having rotted away. The case contains also models and sections of the fruit and a photograph of the tree. (See *North Gallery*, Nos. 474-77, and *Museum No. 2*, Case 54.) A leaf of the Palm is exhibited on the front wall over the second buttress).

**No. 2.** **ROSEWOOD** of Seychelles (*Thespesia populnea*, Corr.). A shrub or low tree, widely distributed in Africa, the Pacific Islands, and tropical Asia. The heartwood is hard and dark coloured, and is used in India for furniture, cart and carriage building, gunstocks, &c. This specimen is on the screen.

**No. 3.** **BOIS ROUGE** (*Wormia ferruginea*, Baill.). A tree 30 to 40 feet high, found in mountain woods in Seychelles. The wood is hard, of a light brown colour, with darker cross markings. This specimen is on the screen.

**No. 4.** **TATAMAKA** (*Calophyllum inophyllum*, L.). A tall tree found also in Mauritius, Rodrigues, Madagascar, &c., and common in tropical Asia and Polynesia. The wood is of a reddish brown colour, moderately hard and close grained; it is sometimes used in India for railway sleepers, machinery, masts, spars, &c. This specimen is on the screen. (See No. 9, *Fiji Collection*.)

**No. 5.** In Upper Gallery is a section of trunk of **MANGO** tree (*Mangifera indica*, L.). A large evergreen tree of India, where the wood is much used for doors, window frames, packing cases, canoes, &c. The tree is commonly planted and is sub-spontaneous in Mauritius and in Jamaica.

Observe in front of building near the third buttress a specimen of the wood of BOIS DE FER (*Stadtmannea Sideroxylon*, DC.) It is extremely hard and dense. Also a specimen of BOIS D'ÉBÈNE (*Diospyros tessellaria*, Poir?). The wood is very heavy, close and even grained, used for furniture, inlaying and ornamental turning, and said to be the best ebony of Mauritius.

## b. Algeria.

**No. 1.** Fine plank of ATLAS CEDAR (*Cedrus atlantica*, Ma-netti). A large tree of Mount Atlas, the wood of which is similar in grain and strength to Deodar (*Cedrus Libani*, Barr. var. *Deodara*), of India.

**No. 2.** Trunk of DATE PALM (*Phoenix dactylifera*, L.). A fine palm of Northern Africa and India, where it is cultivated for its fruits, the Dates of the shops. The tree is also grown in some places on the Riviera, chiefly at Bordighera, exclusively for its young blanched leaves which are used in churches on Palm Sunday. (See *Indian Collection*, p. 15.) Beneath this trunk is a block of NATAL YELLOW WOOD (*Podocarpus elongatus*, L'Herit.). A tree 30 to 70 feet high, 3 to 7 feet in diameter. The wood is close grained, and extensively used for roofs, beams, planks, floors, furniture, &c.

## c. Gambia.

**No. 1.** Cross section of trunk of DATTOCK (*Detarium senegalense*, Gmelin), a tree of tropical Africa, producing a hard and dense wood of a dark brown colour.

## d. Natal.

The specimens comprising this collection are arranged on the back wall, and are as follows :—

**No. 1.** SNEEZEWOOD (*Pteroxylon utile*, Eckl. and Z.) A tree 20 to 30 feet high, 2 to 4 feet diameter. The wood is handsome, strong, durable, and takes a fine polish. It is used for furniture, agricultural implements, bridges, &c. on account of its being but slightly affected by water. It derives its name of Sneeze-wood from its producing violent sneezing when sawn or worked. (See No. 3.)

**No. 2.** BASTARD YELLOW WOOD (*Podocarpus pruinosis*, E.M.). A tree of considerable height and circumference. The wood is a pale yellow colour, tough and durable, extensively used for building purposes throughout the Colony.

**No. 3.** SNEEZEWOOD. (See No. 1.)

**No. 4.** WHITE IRON WOOD (*Toddalia* [*Vepreis*] *lanceolata*, Lam.). A tree about 20 feet high and 2 feet in diameter. The wood is white, hard, and very tough; used chiefly for ploughs, axles, and other waggon work. (See No. 38, *Cape of Good Hope Collection*.)

**No. 5.** CAMDEBOO STINKWOOD (*Celtis kraussiana*, Bernh.). A tree about 20 feet high, and 2 feet in diameter. The wood is of a yellowish white colour, tough, and is used for planks, axe handles, fences, and coopers' work generally. (See No. 13, *Cape of Good Hope Collection*.)

A block of YELLOW WOOD (*Podocarpus elongatus*, L'Herit.) will be found beneath the Date Palm trunk in the Algerian Collection. (See p. 30.)

In the front of the first window observe a fine portion of a branch of the celebrated DRAGON TREE (*Dracena Draco*, L.), from Orotava, Teneriffe, destroyed in a gale in 1867. This is probably the finest relic now existing of the old tree. (See No. 511, *North Gallery*; also specimens of stems, &c. in *Museum No. 2*.)

In right-hand corner of buttress, next to window, is a trunk of Tree Fern (*Dicksonia arborescens*, L'Herit.), from St. Helena, and in the corner of the window itself is a fine trunk of *Cyathea Burkei*, Hook.

Note on front wall over second buttress a leaf of a species of *Raphia* from the Gold Coast.

### e. Cape of Good Hope.

On the screen will be found specimens of the following woods:—

**No. 1.** THORN TREE (*Acacia horrida*, Willd.). A very thorny tree from 20 to 25 feet high, and from 1 to 1½ feet diameter. The wood is hard and tough, and is used for building purposes as well as for wheels, yokes, poles, and agricultural implements.

**No. 2.** KEURBOOM (*Virgilia capensis*, Lam.). A tree 15 to 20 feet high, 1½ to 2 feet in diameter. Wood is somewhat light and soft, and is occasionally used for yokes, spears, rafters, &c.

**No. 3. OLIVENHOUT, OLIVE WOOD** (*Olea verrucosa*, Link.) A shrub 14 to 16 feet high, 8 to 15 inches in diameter. The wood is of a dark colour, very hard, and dense, and used for waggon work, machinery, &c. (See No. 12.)

**No. 4. CAPE ASH** (*Ekebergia capensis*, Sparrm.) A tree 20 to 30 feet high, 2 to 3 feet diameter, the wood is close grained and tough, used for furniture, waggon work, yokes, poles, &c.

**No. 5. STINKWOOD** (*Ocotea* [*Oreodaphne*] *bullata*, Nees ab E.). A tree of the Cape of Good Hope, growing to a height of 50 to 60 feet and a diameter of 4 to 5 feet. Three varieties of Stinkwood are known at the Cape, white, mottled, and one almost black. These differences are said to be due, probably, to the different conditions under which the trees grow. The wood is considered almost equal to teak in strength and durability, and is used generally for building purposes, waggon work, cabinet making, &c., and on account of its exceeding toughness is valuable for gun stocks. The Stinkwood tree has become very scarce in the forests where it once abounded, though by the action of the Government the ruthless destruction of the trees is now prevented.

(Observe also a sample of this wood in large central case).

**No. 6. VLIER** (*Nuxia floribunda*, Benth.) A tree 20 to 25 feet high and 15 to 20 inches in diameter. The wood is light coloured, hard, and is used principally for waggon work.

**No. 7. CEDAR** (*Callitris arborea*, Schrad.) A tree 15 to 20 feet high and 1 to 2 feet in diameter. The wood is useful for ship and house-building, chairs, tables, and other cabinet work.

**No. 8. CAPE BOXWOOD** (*Buxus Macowani*, Oliv.) A tree growing to a height of from 40 to 80 feet and a diameter up to 4 feet. The wood is yellow, close, even grained, hard, and very similar to ordinary Boxwood, for which it has been recommended as a substitute.

- No. 9. BLACK WOOD or ZWARTBAST** (*Royena lucida*, L.). A tree 40 to 50 feet high, 1 to 2 feet diameter. The wood is hard and tough, of a yellowish tint with brown stripes. It takes a good polish and is well adapted for furniture, tools, screws, &c., but is used chiefly for waggon work.

**No. 10. SALIEWOOD** (*Buddleia salviifolia*, Lam.). A small shrubby tree from 15 to 20 feet high, 10 to 15 inches diameter. The wood is hard, tough, has a beautiful wavy grain, and is used chiefly for cabinet making and for teeth for mill wheels.

It is said also to be "quite suitable for the bolder kinds of engraving and excellent for wood type."

**No. 11. KAFIR PLUM or KAFIR DATE** (*Harpephyllum Caffrum*, Bernh.) A tree producing a wood of a dull red mahogany colour. It is easily worked and is suitable for all kinds of indoor carpentry and cabinet work.

**No. 12. WILD OLIVE** (*Olea verrucosa*, Link.). (See No. 3.)

**No. 13. CAMDEBOO STINKWOOD** (*Celtis kraussiana*, Bernh.) A tree about 20 feet high and 2 feet in diameter. The wood is very heavy and close grained; the heartwood is of a dark greenish colour. It is used for yokes, poles, waggon work, table legs, &c., but is liable to warp. (See No. 5, *Natal Collection*.)

The remainder of the Cape woods are arranged in the upper and lower galleries.

**No. 14. *Brabejum stellatifolium*, L. (Wild Almond or Red Stinkwood).** A valuable but rare tree in the Amatola mountains. It is usually about 18 inches in diameter; but in Natal logs are obtainable up to a length of 60 feet with a girth of from 18 to 20 feet. The wood is very durable and is used for waggon work and for furniture.

**No. 15. *Calodendron capense*, Thb. (Wild Chestnut or Kastanie).** A handsome tree growing to a height of 60 or 70 feet, with a good straight trunk of 4 or 5 feet in diameter. The wood is very light but tough, and is used for the hoops of waggon tents, yokes, &c.

**No. 16. *Celastrus acuminatus*, L. (Silkbark or Zybast).** A small tree rarely exceeding a foot in diameter and 20 feet of bole. The wood is heavy, hard, of an even, close structure, prettily shaded when polished. Used in furniture and for fancy work. It is said to be very suitable for umbrella handles.

**No. 17. *Cunonia capensis*, L. (Rood Els or Red Cedar).** Tree 15 to 25, or even 60 feet high,  $1\frac{1}{2}$  to 2 feet diameter. Wood tough, close grained, and takes a good polish. It somewhat resembles the wood of the lime and is very much used by cabinet makers, turners, and wheelwrights. It is but little affected by moisture, and might be used in the construction of mills.

**No. 18. *Curtisia faginea*, Ait. (Assegai Wood).** Tree 40 to 80 feet high, 2 to 4 feet in diameter. Wood of a bright reddish colour, becoming rapidly dull on exposure to the air. It

is extremely strong, tough, close grained, and elastic, and very durable even in moderately damp situations. It is one of the best woods for waggon work, and is used for the spokes and felloes of wheels, furniture, tool handles, and for the shafts of assegais or spears.

**No. 19.** *Elæolendron croceum*, DC. (**Saffron Wood**). A tree 20 to 40 or even 60 feet high, 2 to 4 feet diameter. The wood is fine grained, hard, close, and tough, used for beams, planks, waggons, agricultural implements, cabinet work, &c. The bark is used for tanning and dyeing.

**No. 20.** *Elæodendron sphaerophyllum*, Presl., syn. *Mystrozylon Kubu*, Eckl. and Zey. (**Kaboo Els**). A tree growing about 20 feet high. The wood is hard, tough, and close grained, and though apparently possessing good qualities is but little known or used.

**No. 21.** *Euclea undulata*, Thb. (**Quar**). A tree 20 to 30 feet high, 12 to 15 inches in diameter. The wood is very hard, heavy, and close grained, the heartwood of a deep brown colour, and the sapwood much lighter, but both beautifully marked with transverse wavy lines. It might be found useful for furniture, though it is but very little used in the Colony.

**No. 22.** *Ficus capensis*, Thb. (**Wild Fig**). A tree about 30 feet high, common at Knysna and in the eastern forests. The wood is light and not durable, and is seldom used.

**No. 23.** *Gonioma Kamassi*, E. Mey. (**Kamassi**). Small tree 16 to 20 feet high, 12 to 18 inches diam. Wood very hard, tough, and close grained, one of the finest and heaviest woods of the Colony. It is used for cabinet making, and is particularly adapted for planes and other carpenters tools, also for poles, yokes, ploughs, &c.

**No. 24.** *Mimusops obovata*, Sond. Tree 15 to 20 feet high, 1½ to 2 feet diam. Wood close grained, tough, and heavy, used chiefly for axles and waggon work.

**No. 25.** *Niebuhrria triphylla*, Wend. (**Witbosch-hout**). Tree 20 feet high, 9 to 15 inches diam. Wood light and tough, well adapted for furniture, agricultural implements, &c.

**No. 26.** *Ochna arborea*, Burch. (**Boodhout; Redwood**). Tree 20 to 30 feet high, 1½ to 2 feet diam. Wood hard, used for all kinds of furniture, waggon work, &c.

**No. 27.** *Olea laurifolia*, Lam. (**Black Ironwood**). A straight growing tree 40 to 70 feet high, and 2 to 3 feet



diam. The wood is very hard, the sapwood and heartwood are very distinctly marked, the latter with dark streaks like olive. Decay frequently commences between the heart and sapwoods, often destroying the latter and leaving the heartwood almost imperishable. It is said to be nearly as durable and as suitable for heavy work as *lignum vitæ*. It is extensively used in the Colony for framework of waggons, &c.

**No. 28.** *Olinia cymosa*, Thb. var. *intermedia* (**Hard Pear**). Shrub 14 to 16 feet high, 10 to 12 inches diam. It is said sometimes to attain a height of 25 to 30 feet. Wood hard, tough, very compact and heavy, suitable for musical instruments and general fancy work, valuable for axles, poles, and waggon work generally.

**No. 29.** *Platylophus trifolius*, Don. (**White Alder**). Tree 20 to 40 feet high, 2 to 4 feet diam. The wood is of a yellowish white colour, hard, tough, and durable, and much used in the Colony for furniture and boat-building. The roots are very finely marked.

**No. 30.** *Plectronia ventosa*, L. (**Schaapdrolletje**). Tree from 15 to 20 feet high, with a trunk from 6 to 10 inches diam. The wood, which is hard, heavy, close grained, and tough, has a handsome appearance when polished, and is suitable for fancy work.

**No. 31.** *Podocarpus Thunbergii*, Hook. (**Upright Yellow Wood**). The tree attains a height of about 75 feet, it has a remarkably straight trunk, and a small spreading head of branches. Unless cut in the proper season the wood is liable to warp and split. It is, however, of an even grain, easily worked and of a light yellow colour. It is much used for furniture, and makes excellent shingles.

**No. 32.** *Psychotria eckloniana*, F. Muell., syn. *Grumilea cymosa*, E. Mey. (**Lemon Wood**). Tree 20 to 30 feet high, and of considerable diam. The wood is hard, tough, and useful for many purposes.

**No. 33.** *Pterocelastrus rostratus*, Walp. (**White Pear-wood**). A tree 20 to 25 feet high, and 1 to 2 feet diam. The wood is heavy, strong, and durable, and is much used for felloes of wheels and waggon work generally.

**No. 34.** *Rhus Thunbergii*, Hook. (**Rock Ash**). A shrub 12 to 15 feet high, 3 to 4 feet diam. Wood hard, close grained, and heavy. Valuable for fancy furniture and cabinet work, musical instruments, &c.

**No. 35.** *Scolopia* [*Phoberos*] *Ecklonii*, Benth. and Hook. f. (**Red Pear**). Tree 30 to 35 feet high, 2 to 3 feet diam. Wood hard, heavy, and close grained, used chiefly by wheelwrights and for mill work.

**No. 36.** *Scolopia* [*Phoberos*] *Zeyheri*, Benth. and Hook. f. (**Thorn Pear** or **Wolf Pear**). A straight growing tree 60 or 70 feet high, and sometimes 3 feet diam. The trunk is armed with huge branching thorns. The wood is extremely hard and close grained, and is sawn with much difficulty. In consequence of its hardness it is useful for mill wheels.

**No. 37.** *Sideroxylon inerme*, L. (**White Milkwood**). Tree 15 to 20 feet high, 1 to 1½ feet diam. The wood is of a whitish colour, hard, tough, heavy, and durable. Used for boat-building, fencing, telegraph poles, and waggon spokes.

**No. 38.** *Toddalia* [*Vepris*] *lanceolata*, Lam. (**White Ironwood**). (See No. 4, Natal Collection.)

## D.—AMERICA.

### a. British Guiana.

The collection of woods from this Colony consists of large slabs, arranged on the third and part of the fourth buttress from the west door, on the front of the building.

**No 1.** SIIPIRI, BIBIRU or GREENHEART (*Nectandra Rodiaei*, Schomb.). A large tree abundant within 100 miles of the coast region. The timber will square from 18 to 24 inches, and may be had without a knot from 60 to 70 feet long. A fine even grained, hard wood, well adapted for planking of vessels, house frames, wharves, bridges, &c. The bark yields *Bebeerine*, used as a tonic medicine. (See No. 13a. and Museum No. 1, Case, 87.)

**No. 2.** WALLABA (*Eperua falcata*, Aubl. or *E. rubiginosa*, Miq.). Tree 40 to 50 feet high, 1 to 2 feet diam. The wood is of a deep red colour, hard and heavy. It is impregnated with a resinous oil which makes it very durable, especially in wet situations; it is in consequence much used for shingles, staves, palings, posts, house frames, &c.

**No. 3.** HYAWABALLI, or ZEBRA WOOD (*Connarus guianensis*, Lam., syn. *Omphalobium Lambertii*, DC.). A large tree, the heartwood of which, however, seldom squares more than

10 or 12 inches. The wood is beautifully marked, and is in great request in the Colony for furniture. (See No. 12, also a specimen in large black case.)

**No. 4. PURPLE HEART** (*Copaifera Martii*, Hayne var. *pubiflora*). A large tree, the wood of which is of a beautiful purple colour when freshly cut; it is very strong, elastic, and durable, and is used for furniture, mortar beds, machinery, and other purposes.

**No. 5. HACKIA**, or **LIGNUM VITÆ** of British Guiana (*Ixora triflorum*, Benth. and Hook. f.). Tree 30 to 60 feet high, squaring 16 to 18 inches diam. It is a hard and valuable wood used for mill cogs and shafts, and sometimes for furniture.

**No. 6. BULLY, BULLET, or BALATA** (*Mimusops globosa*, Gært.). Tree about 100 feet high, and from 2 to 3 feet diam. The wood is of a dark brown colour, extremely solid, heavy, close grained, and durable, and is much used in house-building, for posts, beams, and floors, as well as for mill work. The elastic substance known as Balata is furnished by this tree. (See No. 27, *Trinidad Collection*, and *Museum No. 1, Case 68.*)

**No. 7. TURANIRA, or BASTARD BULLY** (*Humirium floribundum*, Mart.). Abundant in the Colony, growing to a height of from 60 to 70 feet and a diam. of from 1 to 2 feet. The wood is of a cedar brown colour, even grained and hard, and is used for framing timbers, spokes of wheels, and numerous purposes where strength is required; the wood, however, is not durable when exposed to the weather.

The two ferns shown on this buttress are, on the left *Cyathea pubescens*, Mett., from Jamaica, and on the right *Alsophila leucolepis*, Mart., from Rio de Janeiro.

**No. 8. SIMIRI or LOCUST** (*Hymenæa Courbaril*, L.). Tree abundant in the Colony, often attaining a height of 60 to 80 feet before branching, and a diam. of from 8 to 9 feet. The wood is of a fine brown colour streaked with veins, and takes a beautiful polish; it is close grained, hard, and compact, and in consequence of its freedom from splitting or warping is well adapted for mill timbers and engine work, ships' planks, tree-nails, &c. The tree under decay exudes a resin similar to Gum Anime. (See also No. 11, and No. 25, *Trinidad Collection*, and *Museum No. 1, Case 36.*)

**No. 9. CARABA or CRAB WOOD** (*Carapa guyanensis*, Aubl.). A large tree, abundant in the Colony, and found also in Western Africa. The timber may be cut from 40 to 60 feet in length, squaring 14 to 16 inches; it is of a reddish

brown colour, takes a good polish, and is much used for furniture, floors, doors, &c. of dwelling houses, also for masts, spars, sugar hogsheads, and shingles. Crab oil is expressed from the seeds. (See No. 19, *Trinidad Collection*, and *Museum No. 1, Case 20.*)

**No. 10.** WADADURI, or MONKEY POT. (*Lecythis grandiflora*, Aubl.). Tree about 100 feet high, 2 to 3 feet diam. Plentiful in the Colony. The wood is hard, tough, and close grained, and is used for furniture, staves for hogsheads, &c.

**No. 11.** SIMIRI or LOCUST. (See No. 8.)

**No. 12.** HYAWABALLI or ZEBRA WOOD. (See No. 3.)

**No. 13.** CUAMARA or TONKA BEAN (*Dipteryx odorata*, Willd.). Tree 60 or 70 feet high, 1 to 2 feet diam. The wood is hard, tough, and very durable, used for shafts, mill wheels, cogs, &c. It is said to bear a greater strain than any wood in the Colony. The tree yields the well known Tonka or Tonquin Bean. (See *Museum No. 1, Case 32.*)

**No. 13a.** Squared trunk of GREENHEART. (See No. 1.)

**No. 13b.** Squared trunk of MORA (*Dimorphandra Mora*, Benth.). A tree 100 to 150 feet high frequently unbranched for 60 or 70 feet and producing a trunk from 2 to 2½ feet diam. The wood is very hard and durable, and was at one time highly valued for shipbuilding in this country.

**No. 14.** ITURI WALLABA (*Eperua Jenmani*, Oliv.). A wood similar to Wallaba (No. 2), but of smaller and finer grain.

The following British Guiana woods exhibited have not yet been botanically identified:—

**No. 15.** CURUBERANDA or BITTER WOOD (*Picramnia sp.*). A light coloured wood described as being plentiful on the Essequibo and Massaruni Rivers, squaring from 14 to 20 inches. It has a bitter taste, is very hard, and is described as being valuable for ship and boat-building.

**No. 16.** WAMARA or BROWN EBONY. A tall tree with a hard close grained wood, adapted both for ship and house-building, and highly valued for furniture. It is described as one of the handsomest woods in the Colony; it is dark brown, often with lighter streaks. The Indians prefer the wood to any other for their war clubs, on account of its hardness. It may be obtained from 6 to 12 inches square, and 20 to 40 feet long.

**No 17.** HOUBABALLI. Tree about 100 feet high, said to be abundant in some localities. The wood is of a light brownish colour, beautifully variegated with black and brown streaks; it

is easily worked; takes a good polish, and is much valued for furniture and cabinet work of every description. It may be obtained in lengths of from 40 to 70 feet, and 15 to 20 inches square.

**No. 18. DUCALIBALLI.** A tree about 50 feet high, and 20 inches in diameter. The wood is of a deep red colour, close grained, compact, and takes a high polish. It is in great repute for cabinet and turning work. Two specimens are shown, also a fine piece in the large central case.

**No. 19. TATABOO or TATABA.** Tree about 60 feet high. Wood hard, tough, adapted for mill timber, planks, shipbuilding, gun carriages, &c.

**No. 20. CABACALLI.** A tall straight growing tree, the trunk of which will square from 12 to 18 inches, for 40 to 50 feet in length. The wood is heavy and close grained, and is highly valued for boat-building as it possesses a bitter principle, which protects it from the attacks of worms.

**No. 21. BROWN SILVERBALLI** (*Nectandra sp.*). Tree 90 feet high, 18 inches diam. Not very plentiful in the Colony. The wood is hard, and is used for the masts as well as for the outside planking of vessels.

In the large central case nearly opposite observe a very fine polished trunk of SNAKEWOOD or LETTER WOOD (*Brosimum Aubletii*, Poepp.). A very valuable wood of British Guiana from whence it is imported for inlaying and making walking sticks.

In the window space note a portion of the base of a curiously formed trunk of a tree known in Asuncion as LAPACHO, belonging to the natural order *Bignoniaceæ*. The wood is used for shipbuilding in the arsenal of Asuncion. A section from the same trunk is shown immediately in front of the window and behind this is a trunk of *Cyathea insignis*, Eat., from Jamaica.

On the left side of the window observe a trunk of *Cyathea Serra*, W., from the West Indies, and near it is a ship's knee of HORSEFLESH MAHOGANY (*Caesalpinia*, near *C. gracilis*, Benth.) from Bahamas. The wood is very strong and durable. A portion of a trunk of a COFFEE tree (*Coffea arabica*, L.) from Jamaica is also here shown, as well as a section of a trunk of LIGNUM VITÆ (*Guaiacum officinale*, L.), a cross section of which is shown in the large black glazed case. The tree is an evergreen 20 to 30 feet high, and is found in most of the West Indian Islands, especially in Jamaica, Hayti, and Cuba, as well as in

Columbia and Venezuela. The intensely hard wood is used for pestles, mortars, rulers, &c., and especially for ships' blocks, specimens of which in different stages of manufacture are exhibited in *Museum No. 1, Case 16*. (See No. 23, *Trinidad Collection*.)

On the floor in front of the window on either side of the LAPACHO trunk, is a small case, one containing illustrations of Tunbridge ware, and the other wood carvings by machinery. Observe in front of the next window a spreading buttressed trunk of a MAHOGANY tree (*Swietenia Mahagoni*, L.), from British Honduras, and behind it a large bowl made from a single trunk of a mahogany tree, and used for washing purposes by the native mahogany cutters in British Honduras. The Mahogany cutters are chiefly Caribs of the main. On the back wall nearly opposite is a remarkably fine slab of figured Honduras Mahogany cut from a log said to have been imported into this country about 1816 and supposed to be the finest specimen ever brought to England. (See *Indian Collection*, p. 14 and *Trinidad Collection*, No. 13.)

Near the Mahogany bowl is a section of the BERMUDA CEDAR (*Juniperus bermudiana*, L.). In damp situations the trunks are usually unsound at the heart. The largest living Cedar in Bermuda measures 59 inches in diameter, but it is a hollow tree. The largest sound tree is 39 inches in diameter. (See specimen under *Canadian Woods on back wall*.)

Near the Mahogany trunk are two native cart wheels from British Honduras consisting simply of transverse sections of the trunks of MAHOGANY (*Swietenia Mahagoni*) and SANTA MARIA trees (*Calophyllum Calaba*, Jacq.). Behind these are portions of the trunks of the following, all from British Honduras: COHUNE palm (*Attalea Cohune*, Mart.), STAR APPLE (*Chrysophyllum Cainito*, L.), IRON WOOD (*Laplacea hamatoxylon*, Carib.), and WHITE MANGROVE (*Rhizophora* sp.), also a slab of YACCA (*Podocarpus coriaceus*, Rich.) from Jamaica.

Observe in large black case a section of SAPODILLA WOOD (*Achras Sapota*, L.), from Belize, British Honduras. A moderate sized tree of the W. Indies and S. America. The wood is intensely hard, heavy, and very durable. (See No. 15, *Trinidad Collection*.)

In this case also will be found a portion of a peculiarly twisted and blackened stem of Honduras Loewood (*Hamatoxylon campechianum*, L.). (See No. 24, *Trinidad Collec-*

tion.) A specimen of COCUS WOOD or GREEN EBONY (*Brya Ebenus*, A. DC.), a small tree of Jamaica, the wood of which is used for making flutes, flageolets, and other musical instruments, as well as for inlaying. A longitudinal section of WEST INDIAN CEDAR (*Cedrela odorata*, L.) showing a spiral growth of wood, also a specimen of SATIN WOOD from the Bahamas, imported in considerable quantities into England for ornamental work and probably furnished by a species of *Zanthoxylum*.

At the angle of the fourth buttress observe a fine trunk of the WAX PALM of the Andes (*Ceroxylon andicola*, H. B.), from S. Michael's, Azores. The trunk, as will be seen, is covered with wax, which is scraped off, melted and made into candles, specimens of which are exhibited in Museum No. 2.

### b. Dominica.

These woods are exhibited on one side of the wooden screen in the centre of the building and are as follows:—

**No. 1.** BOIS RIVIERE (*Chimarrhis cymosa*, Jacq.). A tree 50 to 60 feet high, producing a wood much valued for furniture and indoor work generally.

**No. 2.** MORICYPRE (*Byrsonima spicata*, Rich.). Tree 30 to 40 feet high and about 2 feet in diameter. The wood is useful both for cabinet work and house-building purposes.

**No. 3.** SIMAROUBA (*Simaruba amara*, Aubl.) A lofty tree with a diameter of from 3 to 4 feet. Wood used for making shingles and boards, house work, &c. In consequence of its bitter properties, insects will not attack it. It is used medicinally as a tonic.

**No. 4.** BOIS GRAINE BLEU (*Symplocos martinicensis*, Jacq.). A small tree or shrub. The wood is used for boards and planks for inside house work.

**No. 5.** LAURIER CYPRE (*Ocotea cernua*, Mez., syn. *Oreodaphne cernua*, Nees). A moderate sized tree. The wood is durable and is used for all kinds of outside and inside work.

The remaining five specimens of Dominica woods have not yet been botanically identified. The following are their vernacular names. LAURIER DE VIN, KAKARAT, ACAJOU, LAURIER BORD DE MER, and CETAN ROUGE.

### c. Trinidad.

This collection is exhibited partly on the back wall nearly in the centre of the building, and partly in front of the window opposite. One sample is in the large black case, a few on the neighbouring wooden screen, one specimen on each end of the black case containing Indian woods, and the remainder in the galleries.

**No. 1.** PECIVA (*Bactris minor*, Jacq., syn. *Guilielma speciosa*, Mart.). A Palm with a slender cylindrical trunk 60 feet high. The old wood is of a very dark colour and extremely hard.

**No. 2.** CARAT (*Sabal sp.*). A Palm 20 to 30 feet high, common on rich soil. The wood is hard and durable. (See No. 7).

**No. 3.** BOIS MULATRE, PALO MULATO (*Pentaclethra filamentosa*, Benth.). Tree 30 to 40 feet high, 10 to 20 inches diam. The wood is of a dark colour, even grained, and said to be useful for many purposes, especially underground; some authorities, however, consider it worthless. (This specimen is in the large central case.)

**No. 4.** GRU GRU (*Astrocaryum sp.*). A Palm 20 to 30 feet high, 1 foot diam. The outer part of the trunk is hard, heavy, and durable, takes a fine polish, and is used for walking sticks.

**No. 5.** COCOA NUT (*Cocos nucifera*, L.). A well known Palm, native of the shores of tropical countries, where it is highly valued for its numerous economic applications. (See Museum No. 2.) The wood is very hard and durable, and is known as Porcupine wood. Used chiefly for inlaying.

**No. 6.** MANAQUE (*Euterpe oleracea*, Mart.). A Palm 80 to 100 feet high, the wood of which is used for flooring houses. The soft central portion of the upper part of the stem is eaten as a vegetable when cooked.

**No. 7.** CARAT (*Sabal sp.*) (See No. 2.)

**No. 8.** COCORITE (*Maximiliana insignis*, Mart.). A small Palm of Brazil, from the trunk of which a hard reddish coloured wood is obtained in logs 20 to 30 feet long, by 8 to 10 inches diam. (See No. 10.)

**No. 9.** GRU GRU (*Acrocomia sclerocarpa*, Mart.). A Palm 20 to 30 feet high, known in the West Indies as the GREAT MACAW TREE. The wood is of a dark colour and very hard.



**No. 10.** COCORITE (*Maximiliana insignis*, Mart.). (See No. 8.)

**No. 11.** FUSTIC, PALO NARANGO (*Chlorophora tinctoria*, Gaud. var. *Xanthoxylon*, Endl.). A large tree, capable of furnishing planks 20 feet long, by 12 to 15 inches wide. The wood is light and durable and is used by wheelwrights. (See No. 20.) This specimen is on the screen.

**No. 12.** ROBLE (*Platymiscium platystachyum*, Benth.). A tree producing a tough wood with a silvery transparent grain. This specimen is also on the screen.

**No. 13.** MAHOGANY (*Swietenia Mahagoni*, L.). (See pp. 14 and 40.)

**No. 14.** WEST INDIAN CEDAR (*Cedrela odorata*, L.). A tall tree producing a dark reddish brown wood often beautifully marked and somewhat similar in appearance to Mahogany but much softer. It is used for furniture, cigar boxes, &c. These specimens are shown on either end of the black case adjoining the wall.

The Trinidad Collection is continued in the Galleries.

**No. 15.** *Achras Sapota*, L. (Sapodilla or Nispero). A large tree with hard, heavy, and durable wood of a reddish brown colour, sometimes known as Bullet or Bully wood. It is a native of the West Indies and South America, and is cultivated in all tropical countries for the sake of its edible fruits. (See p. 40.)

**No. 16.** *Andira inermis*, Kth. (Angeline). A tree 20 to 30 feet high, sometimes known as the CABBAGE TREE. The wood is used for all kinds of house-building, mill work-rollers, &c. It is very durable and lasts well in water.

**No. 17.** *Calliandra Saman*, Griseb. (Saman or Rain Tree). A lofty tree producing a fairly hard and even grained wood. (See Museum No. 1, Case 41.)

**No. 18.** *Calophyllum Calaba*, Jacq. (Galba, Palo Maria). A large tree, producing one of the best woods of the country, strong and durable in all situations.

**No. 19.** *Carapa guyanensis*, Aubl. (Crabwood). (See No. 9, British Guiana Collection.)

**No. 20.** *Chlorophora tinctoria*, Gaud. var. *Xanthoxylon*, Endl. (See No. 11.)

**No. 21.** *Cordia* sp. (Black Cypre). A tree producing an open grained softish wood.

**No. 22.** *Dimorphandra Mora*, Benth. (Mora). A tree 100 to 150 feet high, frequently unbranched for 60 or 70 feet and

producing a trunk from 2 to 2½ feet in diameter. It is a native of British Guiana and Trinidad, the wood is very hard and durable, and was at one time highly valued for shipbuilding in this country.

**No. 23.** *Guaiacum officinale*, L. (Lignum Vitæ). (See p. 39.)

**No. 24.** *Hæmatoxylon campechianum*, L. (Logwood). A small spreading tree of Central America and the West Indies. The heartwood is of a dark red colour, hard, and chiefly used for dyeing. (See p. 40 and Museum No. 1. Case 33.)

**No. 25.** *Hymenæa Courbaril*, L. (Locust). (See Nos. 8 and 11, British Guiana Collection.)

**No. 26.** *Lecythis Idatimon*, Aubl. (Guatécare). A large timber tree, native of Guiana, the wood of which is strong, elastic, and very durable. It is consequently much valued for building and other purposes.

**No. 27.** *Mimusops globosa*, Gært. (Balata.) (See No. 6, British Guiana Collection.)

**No. 28.** *Peltogyne paniculata*, Benth. (Purple Heart, Zapateri). A tree from which planks 20 to 25 feet long, and 12 to 15 inches wide, may be obtained. It is very durable, of a beautiful purple colour when freshly cut, but is seldom used for furniture, in consequence of its blackening with age.

**No. 29.** *Piptadenia peregrina*, Benth. (Yoke). A large tree of S. America and the West Indies, producing a hard, close grained wood of a reddish brown colour. The pods are used by the tribes on the Rio Negro for making snuff. (See Museum No. 1, Case 37.)

**No. 30.** *Sideroxylon* sp. (Acoma). A hard wood, the species furnishing which has not been identified.

**No. 31.** *Sterculia caribæa*, R. Br. et. Benn. (Mahoe). A high tree producing a soft wood of little value as it is not durable.

**No. 32.** *Tecoma leucoxylon*, Mart. (Bois Chaire). A fine tree, the wood of which is used for timber and light furniture such as rush bottomed chairs, whence it derives its common name.

**No. 33.** *Vitex divaricata*, Sw. (Bois Léopard). A timber tree of Trinidad, St. Lucia, Dominica, Cuba, and Brazil. The wood is strong and durable.

## d. Canada.

The Canadian collection of timbers is arranged partly on the front and partly on the back walls of the building. The longest slabs are shown on the fourth and fifth buttresses.

**No. 1. WHITE OAK** (*Quercus alba*, L.). A tree averaging 180 feet high, and a diameter of 30 inches. It often occurs, however, 60 or even 80 inches in diameter in the western parts of Upper Canada. The wood is the most valuable of all the Canadian species of *Quercus*. It is very strong and durable, and is used for shipbuilding, cask staves, naves and spokes of waggon wheels, &c. The bark is used both for tanning and in medicine.

**No. 2. BIRD'S EYE, SUGAR, or HARD MAPLE** (*Acer saccharinum*, Wang.). A tree 130 feet high with a trunk often 4 feet in diameter. It is found abundantly throughout Canada and the United States, and is highly valued for the beauty of its wood, which is much used for cabinet and ornamental work, the plainer wood is used for house carpentry, and when well seasoned for carriage and waggon work, as it is considered remarkably strong. The tree yields a quantity of sweet sap, which, boiled, forms maple sugar, largely used in the United States. This specimen is in the large black case. (See *Museum No. 1, Case 25.*)

**No. 3. WHITE BEECH** (*Fagus sylvatica*, L.). A tree averaging 110 feet high with a diameter of trunk from 18 inches to 2 feet. It is common in Canada, where the wood is highly valued on account of its compactness, strength, and durability. (See No. 9, *European Collection.*)

**No. 4. SHELL BARK HICKORY** (*Carya alba*, Nutt.). A tall and slender tree averaging 110 feet high, and the trunk attaining a diameter of 18 inches. The tree is common throughout the Alleghany Mountains from Carolina to New Hampshire, the trunk is covered with long shaggy bark from whence the common name of Shell or Shaggy Bark Hickory is obtained. The wood is very heavy, strong, compact, and elastic, and is much used for the handles of tools, spokes of wheels, shafts and poles of carriages, &c. A yellow dye is extracted from the bark. This specimen is in the large black case. (See No. 12.)

**No. 5. WHITE ASH** (*Fraxinus americana*, L.). A tree averaging 110 feet high and from 2 to 3 feet in diameter; it is abundant throughout Canada. The timber is very tough

and elastic, and is highly valued for the frames of machines, carriage wheels, agricultural implements, &c. The young branches are used for hoops, coarse basket work, and similar purposes. (See No. 26.)

**No. 6. BURTONWOOD** (*Platanus occidentalis*, L.). A tree abundant in the western and south-western parts of Canada, averaging 120 feet high and a diameter of from 2 to 3 feet. The wood is handsomely mottled, strong and durable, and is much used for furniture, principally for bedsteads, also for musical instruments, as pianofortes and harps. Immense quantities are exported to Virginia for tobacco boxes.

**No. 7. WHITE WOOD or TULIP TREE** (*Liriodendron tulipifera*, L.). A tree averaging 130 feet high and a diameter of from 3 to 4 feet, very abundant in the south-western counties of Canada. The wood is easily worked, durable, and takes a high polish; it is extensively used as a substitute for pine for building and cabinet purposes. (See No. 14.)

The Canadian woods are continued on two shelves in front of the adjoining window. All the specimens here shown are transverse sections.

**No. 8. WILD BLACK CHERRY** (*Prunus serotina*, Ehrh.). A tree averaging in height 120 feet and a diameter of from 2 to 3 feet, not very abundant, but found over extensive areas. The wood is of a pale reddish brown colour, compact, fine and close grained, and takes a good polish. It is extensively used in cabinet work. The bark is bitter and is used in medicine as a tonic. (See No. 21.)

**No. 9. HEMLOCK SPRUCE** (*Tsuga canadensis*, Carr.). A tree 80 feet high with a diameter of 3 feet, common in the hilly, rocky lands of Canada. The timber is coarse, elastic, of a loose texture, and not much used; it is however sometimes substituted for pine. It yields Canada pitch and the bark is used for tanning and in the United States in medicine. (See Museum No. 1, Case 124.)

**No. 10. SCARLET OAK** (*Quercus coccinea*, Wang.). A moderate sized tree with a straight trunk. The wood is similar to that of the Black Oak (*Quercus nigra*). It is used for fuel and forms a large part of the wood which is imported into Boston from the south shore.

**No. 11. DECIDUOUS or SWAMP CYPRESS** (*Taxodium distichum*, Rich.). A large tree, native of the swamps of the southern states of North America, where its wood is much used for planks, ships' ribs, water conduits, &c., and the bark

for covering houses. From the roots are thrown up large hollow excrescences, which are sometimes used by the natives as beehives. This specimen is from a tree grown in the Royal Gardens, Kew. A fine slab is shown on the next buttress, No. 16.

**No. 12.** SHELL BARK HICKORY (*Carya alba*, Nutt.). (See No. 4.)

**No. 13.** WHITE PINE or WEYMOUTH PINE (*Pinus Strobus*, L.). A tree averaging 140 to 180 feet high, with a diameter of from 3 to 4 feet. It grows in all parts of Canada in extensive groves or scattered amongst the deciduous forests. It forms a very straight trunk and the wood is consequently very even grained and easily worked. Notwithstanding that it is comparatively soft it is durable, and is used in very large quantities for building purposes. Large trunks are much sought after for ships' masts. A very fine slab measuring 11 feet 10 inches high by 4 feet wide is shown on the next buttress, No. 17. The wood is known in English commerce as YELLOW PINE.

**No. 14.** WHITE WOOD or TULIP TREE (*Liriodendron tulipifera*, L.). (See No. 7.)

**No. 15.** ROCK ELM or SWAMP ELM (*Ulmus racemosa*, Thomas). A tree found in most parts of Canada averaging 150 feet in height and about 2 feet diameter. The wood is very tough and durable in wet situations, and is therefore much used for the keels of vessels, waterworks, piles, pumps, &c., as well as for carriage and waggon work, naves of wheels, gunwales of ships, and similar purposes.

On the fifth buttress observe (**No. 16.**), a fine plank of SWAMP CYPRESS (*Taxodium distichum*, Rich.), from the Southern States of America. It measures 15 feet 9 inches high and 2 feet 4 inches wide. (See No. 11.)

Observe on front angle of buttress a fine trunk of *Sabal blackburniana*, Glazebr., a tall West Indian palm.

**No. 17.** WHITE PINE or WEYMOUTH PINE (*Pinus Strobus*, L.). (See No. 13.)

**No. 18.** BLACK WALNUT (*Juglans nigra*, L.). A tree averaging 120 feet high and 3 feet in diameter, abundant on the rich soils of the western and south-western parts of Upper Canada. The wood is compact, strong, and tough. Used extensively for furniture, building purposes, &c. (See specimen in front of window and also in large black case.)

**No. 19. WHITE SPRUCE** (*Picea alba*, Link.). This is described as the most important timber tree of the American subarctic forests north of latitude 60°. The wood is light, straight, and even grained, compact, but soft, and is extensively used for various purposes. The specimen exhibited measures 4 feet in diameter, and is from Puget Sound, Washington Territory.

Observe in front of window a portion of a trunk of the **AMERICAN TURPENTINE TREE** (*Pinus australis*, Michx.), showing the method of cutting the "pockets" to collect turpentine. (See Museum No. 1, Case 119.) Near this is a fine plant of *Agave rigida*, Mill., var. *elongata* from Merida, Yucatan. The total height of the plant as here shown from the base to the top of the flowering spike is about 24 feet, the stem itself below the leaves is 4 feet high and 1 foot in diameter. This variety of *A. rigida* is largely cultivated in Yucatan for the sake of the fibre, which is known as Henequen.

Observe on the right side of the fourth buttress a trunk of *Alsephila leucolepis*, Mart., from Rio de Janeiro, and on the left side a trunk of *Cyathea arborea*, Sm.

The collection of North American woods is continued on the back wall nearly opposite those just described, and are as follows:—

**No. 20. DOUGLAS FIR** (*Pseudotsuga Douglasii*, Carr.). A tree 150 to 200 feet high forming immense forests in British Columbia and Oregon. The specimen exhibited measures 8 feet in diameter, and was cut from a tree at Puget Sound, Washington Territory.

**No. 21. WILD BLACK CHERRY** (*Prunus serotina*, Ehrh.). (See No. 8.)

**No. 22. SNOWDROP or SILVERBELL TREE** (*Halesia tetraptera*, L.). A tree 20 to 30 feet high, native of river banks in South Carolina. The wood is hard and marked with light veins. The specimen exhibited is from a tree grown in the Royal Gardens, Kew.

**No. 23. PEPPERIDGE** (*Nyssa villosa*, Michx.). A tree 100 feet high and 12 to 18 inches in diameter. Wood white, fine grained, and somewhat soft. It is used for naves of wheels and similar purposes.

**No. 24. POPLAR or COTTON WOOD** (*Populus monilifera*, Ait.). A large forest tree on the margins of lakes and rivers in Canada. The wood is soft, light, easily worked, and suited for carving, turning, &c. "The wooden polishing wheels of

"glass grinders are made of horizontal sections of the entire "tree." A specimen of the bark is shown on the front wall over the fourth buttress.

**No. 25. BLACK ASH** (*Fraxinus sambucifolia*, Lamk.). A tree 60 to 70 feet high and 2 feet in diameter. Found in moist woods and swamps. The wood is tough and elastic, very durable under water. The young saplings are used for hoops.

**No. 26. WHITE ASH** (*Fraxinus americana*, L.). See No. 5.)

Next this specimen is a portion of a trunk of Bermuda Cedar (*Juniperus bermudiana*, L.), a section of which is shown in the third window. (See p. 40.)

**No. 27. SASSAFRAS** (*Sassafras officinale*, Nees.). A large tree, the wood of which is of a dark colour and aromatic and is used, together with the bark, in medicine. This specimen is exhibited in the large black case.

At the western end of the building behind the entrance door observe a fine plank of Californian Redwood (*Sequoia sempervirens*, Endl.), measuring 16 feet high and 3 feet 4 inches wide.

## E. AUSTRALIA.

### a. New South Wales.

**No. 1. BEEF WOOD or SILKY OAK** (*Stenocarpus salignus*, R. Br.). A tree 50 to 80 feet high and 1 to 3 feet in diameter. Found also in Queensland. The wood is of a dark colour, beautifully marked, durable, and is used for cabinet work. (See No. 15.)

**No. 2. PRICKLY TEA TREE** (*Melaleuca styphelioides*, Sm.). A tree 40 to 80 feet high and 1 to 3 feet in diameter. Found only in New South Wales. The wood is hard and close grained, almost imperishable underground, but splits in seasoning. The outer bark is easily detached in numerous thin layers.

**No. 3. BLACKBUTT** (*Eucalyptus pilularis*, Sm.) (See p. 51.).

**No. 4. SCRUB or BASTARD BOX** (*Tristania conferta*, R.Br.) A tall tree found also in North Australia and Queensland. The

wood is very durable, and is used for shipbuilding, scantling, wooden trainrails for sawmills, &c. (See No. 2, *Queensland Collection*.)

**No. 5. MORETON BAY PINE** (*Araucaria Cunninghamii*, Ait.). A tree with a pyramidal or somewhat flattened head, attaining in some situations 150 to 200 feet high and 4 to 5 feet in diameter. It grows in great profusion in all the brush forests on the Richmond River. The timber from the inland or mountain brushes is preferred to that from the coast; it is exported to Sydney and elsewhere in large quantities. Some trees will yield as much as 10,000 feet of saleable timber. It is used for ships' spars, which may be obtained from 80 to 100 feet in length, and it is also in great request in New South Wales for ceiling lining, flooring boards, and all light work inside buildings. The tree is found also in Queensland.

**No. 6. MARRAI-UO or SALLOW** (*Acacia sp.*) A tree 40 to 80 feet high and 1 to 3 feet in diameter. It is one of the largest trees of the genus in Australia. The wood is very handsome, tough, and light, valuable for axe handles and bullock yokes.

**No. 7. LEAD COLOURED GUM** (*Eucalyptus sp.*, probably *E. stellulata*, Sieb.). A tree 30 to 40 feet high, and 1 to 3 feet in diameter. The wood is described as being of no value for timber but excellent for fuel. In some parts it is used for axe handles and bullock yokes.

**No. 8. SPOTTED GUM** (*Eucalyptus maculata*, Hook.). A tree 80 to 150 feet high, and 3 to 5 feet in diameter, of straight growth. The wood is valued for shipbuilding and for superstructures, but it is not durable in the ground. (See No. 51 and No. 1, *Queensland Collection*.)

**No. 9. TEAK** (*Endiandra glauca*, R. Br.). A small tree of Queensland, producing a hard, close, and fine grained wood.

**No. 10. BROAD-LEAVED ROUGH IRON BARK** (*Eucalyptus siderophloia*, Benth.). A tree 70 to 100 feet high, 2 to 4 feet diameter. One of the strongest and most durable timbers in New South Wales, used for large beams in stores for heavy goods and for other purposes where great strength is required. (See No. 53.)

**No. 11. BURRAM BURRANG, ROUGH BARKED GUM.** (*Eucalyptus sp.*) A tree 80 to 90 feet high, 3 to 4 feet diameter, furnishing a very hard and durable wood.

**No. 12. WOOLLY BUTT OF ILLAWARRA** (*Eucalyptus longifolia*, Link & Otto). A tree 100 to 150 feet high, and 3



to 6 feet diameter. A magnificent tree, the wood of which is very highly valued for wheelwrights' work. (See No. 3, *Victoria Collection*.)

**No. 13. FLOODED GUM** (*Eucalyptus saligna*, Sm.). A tall tree producing a strong, durable wood, valued for shipbuilding, house carpentry, fencing, the naves and felloes of wheels, &c. It is one of the most easily worked timbers of the Eucalypts. (See No. 18.)

**No. 14. RED GUM** (*Eucalyptus tereticornis*, Sm.). A tree 70 to 100 feet high, 3 to 6 feet in diameter. The wood is hard and close grained and is much used for naves and felloes of wheels and underground work.

**No. 15. BEEF WOOD OR SILKY OAK** (*Stenocarpus salignus*, R. Br.) (See No. 1.)

**No. 16. MOUNTAIN APPLE TREE OR ORANGE GUM** (*Angophora lanceolata*, Cav.). A tree 40 to 50 feet high and 2 to 3 feet diameter. The wood is of little value, but forms an useful fuel. (See No. 22, *Victoria Collection*.)

**No. 17. WHITE OR PALE IRON BARK** (*Eucalyptus paniculata*, Sm.). A tree 80 to 100 feet high, 3 to 4 feet diameter; it is remarkable for its smooth uniform outer bark and very hard, tough, and strong wood. It is considered the most valuable of all the iron barks and is specially useful for girders, sleepers, spokes for wheels, and all other uses where strength and durability are necessary. The tree is found also in Victoria.

**No. 18. BLUE GUM OF COAST DISTRICTS** (*Eucalyptus saligna*, Sm.) (See No. 13.)

In front of small window between the seventh and eighth buttresses observe slab of **IRON BARK** (*Eucalyptus* sp.). A tree from 80 to 120 feet high with a trunk from 2 to 4 feet diameter. The wood is very hard and difficult to work. On the top of the eighth or left-hand buttress, close to the specimen just described, is a fine slab of **BLACKBUTT** (*Eucalyptus pilularis*, Sm.). A tree 100 to 130 feet high, and from 3 to 6 feet in diameter. It is one of the largest trees belonging to the Eucalypti. The timber is of excellent quality for house building, carpentry, or other purposes, where strength and durability are required. This species is found in New South Wales, Queensland, and Victoria. (See No. 3 and No. 17, *Victoria Collection*.) Between the two small windows in front of the building is a slab of **WHITE OR SHE PINE** (*Podocarpus elata*, R. Br.). Found also in Queensland. (See No. 83, also No. 9,

*Queensland Collection.*) Between the door and the small window observe a fine trunk, 17 feet 9 inches high, of *Dicksonia antarctica*, Labil. A tree fern of Australia and New Zealand, growing from 30 to 50 feet high, with a trunk sometimes 4 feet in diameter. Another specimen, from Ballarat, is shown on the angle of the eighth buttress. Near this, in front of the window, observe a TABLE made of the following ornamental woods of New South Wales:—AUSTRALIAN CYPRESS PINE (*Frenela robusta*, A. Cunn., syn. *Callitris robusta*, R. Br.), TULIP WOOD (*Harpullia pendula*, Planch.), and LIGHTWOOD (*Ceratopetalum apetalum*, D. Don.). At the bottom of the stairs is a portion of the trunk of a CABBAGE PALM (*Livistona australis*, Mart.). It grows from 40 to 80 feet high, with a dense crown of leaves at the top. The young leaves are much used for splitting and making into hats and ornamental articles, specimens of which may be seen in Museum No. 2. This Palm is found in New South Wales, Queensland, and Victoria.

On the end wall, near the front of the building are two tree fern trunks (*Alsophila leichhardtiana*, F. Muell. and *A. australis*, R. Br.). Closely allied species. The last-named measures 24 feet 6 inches high and grows in Australia to a height of 80 feet.

These specimens were received from the Paris Universal Exhibition 1878. In front of these tree ferns is a very large Ship's Knee of the wood of an unnamed species of *Eucalyptus*. On the right-hand of the end window observe a fine trunk, from the Palm House, of *Livistona humilis*, R. Br. A Palm of North Australia.

The following woods of New South Wales are exhibited in the galleries:—

**No. 19.** *Acacia binervata*, DC. (Black Wattle of Illawarra). A tall shrub or tree, sometimes attaining a height of 30 to 40 feet, and a diameter of from 12 to 18 inches. It is found only in New South Wales. The wood is close grained, tough, and light, and is much used for axe handles and bullock yokes.

**No. 20.** *Acacia falcata*, Willd. (Hickory, *Lignum vitae*). A shrub or tree from 15 to 20 feet high, and 8 to 14 inches in diameter. Found also in Queensland. The wood is hard and close grained; the bark contains tannin, and is used by the aborigines to poison fish, and also for making an embrocation for the treatment of cutaneous diseases.

**No. 21.** *Acacia glaucescens*, Willd. (Hickory Boree). A tree of 50 feet or more high, and 12 to 24 inches in diameter, growing also in Queensland. The wood is handsome in appearance, and is hard, close, and tough.

**No. 22.** *Acacia harpophylla*, F. Muell. (Brigalow Myall). A tree, the wood of which is brown, hard, heavy, and elastic, used by the natives for spears, boomerangs, and clubs. It is also used for building purposes, and for fancy turnery, and possesses a strong odour of violets. The specimen is from Narrabri, New South Wales.

**No. 23.** *Acacia pendula*? A. Cunn. (Myall). A handsome tree 20 to 30 feet high and 9 to 18 inches in diameter. Native also of Queensland. The wood is dark coloured, hard, and even grained, and violet scented. This specimen is in the large central case. (See *Victoria Collection*, p. 69.)

**No. 24.** *Acronychia Baueri*, Schott. (Turmeric). A tree averaging 40 to 60 feet high, but described in the Exhibition Catalogues of New South Wales woods (where it is called *Zieria octandra*) as growing to a height of from 40 to 70 feet, with a diameter of from 1 to 2 feet. The wood is very hard, close grained, and strong, and might prove valuable as an useful and ornamental wood. The inner bark is of a bright yellow colour, and is used for ornamental purposes.

**No. 25.** *Alphitonia excelsa*, Reiss. (Red Ash). A fine timber tree often 100 feet high, common also in Queensland and North Australia. The wood is used for staves, axe handles, and various purposes in the coastal districts of New South Wales. The heartwood becomes dark red with age. (See No. 4, *Fiji Collection*.)

**No. 26.** *Alstonia constricta*, F. Muell. (Bitter Bark). A tall shrub or tree, sometimes attaining a height of 60 or 70 feet and a diameter of 12 to 15 inches. It is found in several parts of Queensland. The wood is yellow, close grained, and works well, but is not much used. The bark is intensely bitter and is used as a tonic medicine.

**No. 27.** *Angophora subvelutina*, F. Muell. (Broad-leaved Apple Tree). A tree attaining a considerable size, with a rough fibrous bark. Native also of Queensland. The wood is very strong and durable, and is used for posts and rails.

**No. 28.** *Angophora intermedia*, DC. (Apple Tree). A handsome tree 40 to 60 feet high, 1 to 4 feet in diameter. The wood is strong and is much used by wheelwrights.

**No. 29.** *Backhousia myrtifolia*, Hook. and Harv. (**Myrtle or Grey Myrtle**). A tree 30 to 40 feet high, and 1 to 3 feet in diameter. The wood is exceedingly hard, close grained, and heavy, and was formerly much used by the aborigines for their clubs, boomerangs, and spear points. It is apt to split in drying, but when properly seasoned it is very strong and durable.

**No. 30.** *Baloghia lucida*, Endl. (**Brush Bloodwood**). A middle sized tree found also in Queensland, Norfolk Island, and New Caledonia. The wood is somewhat soft, and is not used.

**No. 31.** *Banksia integrifolia*, L. fil. (**White Honey-suckle**). A tree sometimes attaining a considerable size, growing also in Queensland and Victoria. The wood is beautifully marked, but is subject to attacks by the larvæ of coleopterous insects.

**No. 32.** *Callistemon salignus*, DC. (**White Bottle Brush**). A tall shrub or small tree. It is found in Queensland, Victoria, South Australia, and Tasmania. The wood is very hard, close grained, and heavy.

**No. 33.** *Cargillia pentamera*, F. Muell. (**Black Myrtle**). A tree attaining a considerable height, sometimes even to 100 feet, and a diameter of from 2 to 3 feet, growing also in Queensland. The wood is tough, but little used. The fruit was formerly eaten by the aborigines.

**No. 34.** *Castanospermum australe*, A. Cunn. (**Moreton Bay Chestnut, or Bean Tree**). A magnificent tree attaining a height of 130 feet, and a diameter of from 5 to 6 feet, common also in Queensland. The wood is prettily grained, streaked with dark brown, not unlike walnut wood. It is largely used as a furniture wood, and is sometimes split for staves.

**No. 35.** *Casuarina suberosa*, Ott. and Dietr. (**She Oak or Black Oak**). A tree 30 to 50 feet high, and 16 to 24 inches in diameter, found in Queensland, Victoria, and Tasmania. The wood is beautifully marked of a reddish colour and is valued for cabinet work, but is apt to split in drying. It is said that it should be used only in veneers. It is very largely applied for shingles.

**No. 36.** *Casuarina torulosa*, Ait. (**Forest Oak or Beef Wood**). A tree sometimes growing to a height of 60 feet, with a diameter of 2 feet, native also of Queensland and South Australia. The wood is extensively used for shingles, and sometimes for cabinet work.

**No. 37.** *Cedrela Toona*, Roxb. (Red Cedar). A tall handsome tree, found also in Queensland. The wood is the best known and perhaps the most valuable in New South Wales. It is easily worked, and in dry situations is very durable, and largely used for all kinds of purposes. A good specimen of this wood is equal in appearance and quality to the best mahogany. One tree is recorded to have been cut down in New South Wales which measured 10 feet in diameter at the base and was calculated to yield 30,000 feet of saleable timber.

Three specimens of this wood showing its varied character are exhibited. (See No. 8, *Queensland Collection* and No. 22, *Indian Collection*.)

**No. 38.** *Ceratopetalum apetalum*, D. Don. (Coach Wood, Light Wood, Leather Jacket). A beautiful tree with a cylindrical stem from 50 to 60 or even 100 feet high, and a diameter of from 2 to 3 feet, covered with a shining silvery bark. It is found only in New South Wales. The wood is soft, light, close grained, with an agreeable fragrance, owing to the presence of coumarine, and is valued for joiners and cabinet work as well as for coach building. One specimen of this wood is shown in the large black case.

**No. 39.** *Cryptocarya obovata*, R. Br. (White Sycamore). A fine, bushy headed tree 80 to 130 feet high, and 2 to 5 feet in diameter, found also in Queensland. The wood is white, soft, and is used for many purposes.

**No. 40.** *Cupania pseudorhus*, A. Rich. (Iccaaya). A moderate sized spreading tree, attaining in favourable situations a height of 70 feet, and a diameter of 2 feet, found also in Queensland. The wood is somewhat soft and is not used.

**No. 41.** *Cupania xylocarpa*, A. Cunn. (Wootarie). A moderate sized tree growing to a large size in favourable situations, native also of Queensland. The wood is close grained and hard, particularly so when dry, but it is not used.

**No. 42.** *Daphnandra micrantha*, Benth. (Satinwood). A handsome tree of moderate size but sometimes growing to a height of 80 feet, and from 2 to 3 feet in diameter, native also of Queensland. The wood is yellow coloured when fresh, but is not put to any important use. (See No. 6, *Queensland Collection*.)

**No. 43.** *Diploglottis Cunninghamii*, Hook. f. (Tamarind Tree). An elegant, slender growing tree 50 to 90 feet high, and 1 to 2 feet in diameter, found also in Queensland and North Australia. The wood is whitish and coarse grained. The fruit is acid and is used by the colonists for preserving.

**No. 44.** *Doryphora Sassafras*, Endl. (New South Wales Sassafras). A handsome looking tree, growing to a height of 80 or 100 feet, and 2 to 3 feet in diameter. Found only in New South Wales. The leaves exhale an aromatic odour. The wood is soft, of no strength or durability, and consequently is not used, except for flooring boards locally. An infusion of the aromatic bark is now used as a tonic medicine.

**No. 45.** *Duboisia myoporoides*, R. Br. (Cork Wood). A tall shrub or small tree, 15 to 30 feet high, 10 to 16 inches in diameter, found also in Queensland and New Caledonia. The wood is white, very soft, but close and firm, and is considered excellent for carving.

The leaves yield a mydriatic alkaloid (*Duboisine*) used in ophthalmic operations.

A closely allied species, *D. Hopwoodi*, F. Muell., furnishes the Pituri of the Australian blacks. (See *Museum No. 1, Case 76.*)

**No. 46.** *Dysoxylum fraserianum*, Benth. (Rosewood or Pencil Cedar). A tree 80 to 130 feet high, producing a fragrant timber, much valued for indoor work, furniture, cabinet work, turning, wood engraving, and shipbuilding. The tree occurs in Northern New South Wales and Queensland, and in a report of an examination of a Queensland sample sent to the Colonial and Indian Exhibition of 1886, Mr. Allen Ransome says "If it can be imported at a reasonable price, it might take the place of mahogany."

**No. 47.** *Dysoxylum lessertianum*, Benth. A tree 80 to 100 feet high, and 1 to 3 feet in diameter, found only in New South Wales. The wood is of a dark colour, sometimes beautifully marked, and easily worked.

**No. 48.** *Elaeodendron australe*? Vent. (White Myrtle or Blue Ash). A small or middle sized tree, found in Queensland and Northern Australia. The wood is close grained and prettily marked, valuable for staves, oars, and shingles.

**No. 49.** *Endiandra virens*, F. Muell.? (Ullagal Mabbie, Bat and Ball, native Orange or native Pomegranate). A

tall shrub or sometimes a tree attaining a considerable height, native only of New South Wales. The wood is not used.

**No. 50.** *Eucalyptus crebra*? F. Muell. (Narrow leaved, Smooth or Red Iron Bark). A tree 50 to 90 feet high, and 2 to 4 feet in diameter. The wood is of a reddish colour, close grained, hard and durable, and highly valued for many purposes.

**No. 51.** *Eucalyptus maculata*, Hook. (Spotted Gum). (See No. 8 and No. 1, Queensland Collection.)

**No. 52.** *Eucalyptus melliodora*, A. Cunn. (True or Yellow Box). A moderate sized tree. The wood is hard, tough, close grained, and durable, both underground and in water. It is much used for spokes for wheels, rollers, heavy framework, telegraph and fence posts, &c. The tree is found also in Queensland.

**No. 53.** *Eucalyptus siderophloia*, Benth. (Red Ironbark). A tree of New South Wales and Queensland. (See No. 10).

**No. 54.** *Eucalyptus viminalis*, Lab. coast variety (Grey Gum). A tree usually of moderate size, but sometimes growing to a great height. Found in New South Wales, Victoria, Tasmania, and South Australia. The timber varies very much in colour, and is used for shingles, rails, and generally as a rough building material.

**No. 55.** *Eucriphia Moorei*, F. Muell. (Plum or Acacia). A handsome tree found only in New South Wales. The wood dresses easily, and is useful for the bodies of buggies.

**No. 56.** *Eugenia myrtifolia*, Sims. (Brush Cherry). A glabrous evergreen tree, growing up to a height of 80 feet, and from 1 to 2 feet in diameter, found also in Queensland. The tree is a beautiful object in consequence of its glossy foliage and abundance of purple fruit, which is sometimes used by settlers for jam and wine making. The wood is strong and elastic, and is used for staves, oars, boat-building, tool handles, &c. From it, the aborigines make boomerangs and shields.

**No. 57.** *Ficus macrophylla*, Desf. (Large leaved or Moreton Bay Fig). A noble tree with a broad spreading head and a trunk of great thickness, sometimes exceeding 10 to 15 feet, from which wall-like buttresses radiate in all directions, similar to those formed by the *Ficus elastica* in India. (See Museum No. 1, Case 99.) The tree is found also in Queensland. The wood is soft, open grained, and not durable,

though it is sometimes made into packing cases on the Clarence River.

**No. 58.** *Ficus rubiginosa*, Desf. (Illawarra or Port Jackson Fig). A tree of considerable size, with spreading branches throwing out woody roots, which descend to the ground, forming pillars as in the Indian Banyan tree. (See *Museum No. 1, Case 99.*) Like the last-named species the wood is soft and of little value.

**No. 59.** *Flindersia australis*, R. Br. (Flindosa, Mountain Ash, Beech, Cudgerie). A tree sometimes 80 to 100 feet high and from 2 to 4 feet in diameter. A native also of Queensland. The wood is valuable for staves for which purpose it is much used in the Clarence district. It is also used for keys for railway purposes. (See No. 10, *Queensland Collection.*)

**No. 60.** *Flindersia oxleyana*, F. Muell. (Long Jack or Light Yellow Wood). A much branched tree of Northern New South Wales and Queensland, often attaining 100 feet high and from 24 to 42 inches in diameter. The wood is of the Beech class and often comes to market as Beech (*Gmelina*). It is not so valuable as the latter, but still is an useful wood. (See No. 12, *Queensland Collection.*)

**No. 61.** *Flindersia* sp. (Wyagerie, Flintamentosa). A magnificent tree attaining a height of 150 feet and 3 to 6 feet in diameter described as the monarch of the Northern forests, and distinguished from other species of the genus by its dark brown and rough scaly bark. The wood is used for house-building purposes and is very hard and durable.

**No. 62.** *Frenela macleayana*, Parlat. (Port Macquarie Pine). A tall pyramidal tree with spreading branches. The woods of *Frenela* are chiefly used for house-building as they resist the attacks of white ants (Termites.)

**No. 63.** *Frenela robusta*, A. Cunn, var. *verrucosa*, syn. *Callitris verrucosa*, R. Br. (Coorong, Cypress Pine). A tree of considerable size, often exceeding 90 feet and a diameter of from 18 inches to 2 feet. Sometimes, however, it is found as a tall shrub. Besides being a native of New South Wales, it is found also in Queensland, Victoria, and North, South, and West Australia. The wood is used for many purposes, and the root was formerly much used by cabinet makers for veneering. (See No. 25, *Victoria Collection.*)

**No. 64.** *Geijera salicifolia*, Schott. (Balsam of Copaiba Tree, Wilga). A tall shrub or small tree found also in



Queensland, Victoria, and South and West Australia. The wood is but little used. The odour of the foliage is so disagreeable to ants that they will not climb the tree, hence articles are placed in its branches to be safe from their attacks.

**No. 65.** *Gmelina Leichhardtii*, F. Muell. (Beech). A fine timber tree, attaining a height of 80 to 150 feet and a diameter of from 3 to 5 feet, found also in Queensland. The wood has a fine, bright, silvery grain, and is much prized for flooring and the decks of coasting vessels, as it is said never to shrink after moderate seasoning. It is put to innumerable uses in New South Wales and is one of the most valuable timbers the Colony produces.

**No. 66.** *Grevillea robusta*, A. Cunn. (Silky Oak). An ornamental tree 80 to 100 feet high, found also in Queensland. The wood is very generally used for staves for tallow casks and is becoming scarce in consequence. The tree is largely planted for ornamental purposes.

**No. 67.** *Harpullia pendula*, Planch. (Tulip Wood). A handsome tree of moderate size, found also in Queensland. The wood is very strong and much used for cabinet work in consequence of its fine markings of black and yellow.

**No. 68.** *Helicia præalta*, F. Muell. (Nut Tree). A moderate sized or sometimes lofty tree, 100 feet high found also in Queensland. The wood is finely figured and somewhat resembles that of *Grevillea robusta*.

**No. 69.** *Jacksonia scoparia*, R. Br. (Dogwood). A tall shrub or small tree, 12 to 15 feet high and 8 to 12 inches diameter, found also in Queensland and West Australia. The wood is hard and takes a good polish, but is not applied to any particular purpose on account of its small size and usual unsoundness. It emits a disagreeable smell when burning, hence its common name of dogwood.

**No. 70.** *Laportea gigas*, Wedd. (Larger Nettle Tree). A tree 100 to 160 feet high and 3 to 8 feet in diameter. The trunk is soft, juicy, and fibrous, and is supported at the base by wing-like buttresses. The wood is of no value, but a strong fibre is obtained from the bark by the aborigines. The leaves are often 12 to 15 inches in diameter and their sting is most formidable.

**No. 71.** *Macadamia ternifolia*, F. Muell. (Queensland Nut Tree). A tree 30 to 50 feet high with very dense foliage, found also in Queensland. The wood is firm and has a

fine grain. The seed is one of the best edible nuts in Australia but its intensely hard shell is a drawback to its use.

**No. 72.** *Melaleuca linariifolia*, Sm. var. (Soft leaved Tea Tree). A tree 40 to 80 feet high, 2 to 3 feet in diameter, found also in Queensland. The wood is very hard, heavy, and close-grained, but like that of other *Melaleucas* is liable to split.

**No. 73.** *Melaleuca styphelioides*, Sm. (Prickly Tea Tree). A tree sometimes attaining a height of 80 feet and a diameter of 1 to 3 feet. The wood is hard and durable, and is used for posts and similar purposes in damp situations as it stands well in water.

**No. 74.** *Melaleuca uncinata*, R. Br. (Common Tea Tree). A tall shrub or tree, sometimes growing to a height of from 40 to 80 feet and a diameter of from 2 to 4 feet. It grows also in Victoria and South and West Australia. The wood is hard, heavy, and durable.

**No. 75.** *Melia composita*, Willd. (White Cedar). A moderate sized tree found also in North Australia and Queensland. It is a very quick grower and is largely planted for ornamental purposes. The wood is soft and easily worked but it is considered of an inferior quality. (See No. 4, *Queensland Collection*.)

**No. 76.** *Myrsine variabilis*, R. Br. Called **Mutton Wood** in Southern New South Wales. A glabrous tree 30 to 40 feet high and 6 to 15 inches in diameter. Growing also in Queensland and Victoria. The wood is prettily grained, of a whitish or pinkish tinge and easily worked. (See No. 26, *Victoria Collection*.)

**No. 77.** *Myrtus Becklerii*, F. Muell. (Ginugal). Described as a tall shrub, but said sometimes to attain a height of from 60 to 80 feet and a diameter of 2 feet. The wood is said to be durable; it is of a reddish colour when fresh, but becomes pale in drying.

**No. 78.** *Nephelium tomentosum*, F. Muell. (Uroobie). A tree 20 to 30 feet high, but described as sometimes attaining a height of 80 feet and a diameter of 3 feet, found also in Queensland. The wood is hard and is occasionally used for building purposes.

**No. 79.** *Olea paniculata*, R. Br. (Marblewood). A moderate sized tree, found also in Queensland. The wood is said to be hard and durable, but is not used.

**No. 80.** *Orites excelsa*, R. Br. (Red Ash, Silky Oak). A handsome tree 40 to 60 feet high. The wood is used for cask staves.

**No. 81.** *Petalostigma quadriloculare*, F. Muell. (Native Quinine). A small or moderate sized tree, native also of North Australia and Queensland. The wood is not applied to any useful purpose, but the bark under the name of Bitter bark has been recommended as a substitute for cinchona. (See Museum No. 1, Case 93.)

**No. 82.** *Pittosporum undulatum*, Vent. (Cheesewood, Native Laurel). A tree attaining in favourable situations a height of 40 or even 60 to 90 feet, with a diameter of from 1 to 2 feet 6 inches. It grows also in Victoria. The wood is of a light colour, close grained and hard, and when carefully seasoned is very suitable for turning, and has been tried for engraving. In 1862 Prof. de la Motte, of King's College, reported that he considered "this wood well adapted to certain kinds of wood engraving. It is not equal to Turkey Box, but superior to that generally used for posters, and it would answer for the rollers of mangles and wringing machines." One of these prepared blocks is exhibited in case 7, Museum No. 1. (See No. 4, Victoria Collection.)

**No. 83.** *Podocarpus elata*, R. Br. (White, or She Pine). A fine tree 70 to 130 feet high, and from 2 to 5 feet in diameter. Native also of Queensland. The wood is close grained, but soft and easily worked. Useful for joiners and cabinet work. It is sometimes beautifully figured. (See p. 51, and No. 9, Queensland Collection.)

**No. 84.** *Rhodamnia trinervia*, Blume, (Brush Turpentine or Three veined Myrtle). A tree attaining a height of 80 feet, and a diameter of from 2 to 3 feet, flowering white but a small shrub. It is found also in coastal Queensland. The wood is not easy to season, and is generally hollow when large. It is hard and compact, but is not much used at present.

**No. 85.** *Rhus rhodanthema*, F. Muell. (Dark Yellow Wood). A tree 70 to 80 feet high, growing also in Queensland. The wood is of a yellow colour, turning brown with age. It is sound and durable, close grained, and often beautifully marked. It takes a fine polish, and is considered a good wood for cabinet work.

**No. 86.** *Sideroxylon australe*, Benth. and Hook, f., syn. *Achras australis*, R. Br. (Native Plum). A tree sometimes growing to a great height, and a diameter of from 1 to 3 feet

found also in Queensland. The wood is very hard and compact, neatly, and often prettily marked, and might be used for cabinet purposes.

**No. 87.** *Stenocarpus sinuatus*, Endl. (Fire Tree, or Yiel Yiel). A tree sometimes described as small and slender, and sometimes said to attain a height of 60 or 100 feet, and about 2 feet in diameter. It grows also in Queensland. When in flower it is a gorgeous sight. The wood is much valued by carpenters for inside work in buildings, and to some extent for cabinet work; it is also used for staves for casks.

**No. 88.** *Sterculia fatida*, L. (Stave Wood). A tall stout tree, frequently with a clear straight trunk of 70 feet. The species is found also in North Australia and ranges over the East Indian and Malayan peninsulas and the Archipelago, as well as in east tropical Africa. The wood is soft and apparently of little use. It is a doubtful native of Australia. (See No. 63 *India Collection*.)

**No. 89.** *Syncarpia laurifolia*, Ten. (Turpentine Tree). A tree 100 to 150 feet high. Found in New South Wales and Queensland. The timber is very valuable for piles and fence posts, and is said to resist damp, the attacks of teredo, and white ants.

**No. 90.** *Syncarpia leptopetala*, F. Muell. (Iron Wood). A tree 50 to 60 feet high, growing also in Queensland. The wood is put to the same purposes as the last.

**No. 91.** *Synoum glandulosum*, A. Juss. (Bastard Rose-wood, Pencil Cedar or Turnip Wood). A moderate sized tree found also in Queensland. The wood when fresh is of a deep red colour, emitting a scent like the rose. It is used for cabinet purposes, for which it has long been highly valued, as well as for the inside lining of houses and in shipbuilding.

A form of this species which has been called *Synoum Lardneri* (No. 92), is said to differ in its wood by having no scent, and a more open grain, similar to the pencil cedar, hence one of its common names. The name of Turnip wood is derived from the smell of the bark resembling that of a swede turnip.

**No. 93.** *Tarrietia argyrodendron*, Benth. (Silver Tree, Iron Wood). A tall tree, found also in Queensland in shady woods. The timber is extensively used for staves.

**No. 94.** *Tristania neriifolia*, R. Br. (Water Gum). A tall slender shrub, or small tree, found only in New South Wales. The wood is very close grained and elastic, but is apt to split in drying.

**No. 95.** *Tristania suaveolens*, Sm. (Broad leaved Water Gum). A tree 50 to 60 feet high and 2 to 3 feet in diameter found also in North Australia and Queensland. The wood is said to be very durable in wet situations, and consequently useful for posts and sleepers. It resists the ravages of white ants to a great extent.

**No. 96.** *Trochocarpa laurina*, R. Br. (Brush Cherry). A tree 20 to 30, or even 40 feet high, and 10 to 16 inches in diameter, growing also in Queensland. The wood is very close grained, and when seasoned carefully, is useful for turning and other purposes where a tough fine grained wood is required.

**No. 97.** *Villaresia Moorei*, F. Muell. (Scrub Maple). A handsome lofty tree, furnishing an excellent light-coloured and durable wood, close grained, prettily marked, and suitable for bedroom furniture.

**No. 98.** *Weinmannia Bentharii*, F. Muell. (Leather Jacket). A large tree; the wood is used for staves and inside work. It is firm, close grained, and easily wrought.

**No. 99.** *Xylomelum pyriforme*, Knight. (Native Pear). A tree 20 to 40 feet high, and 6 to 8 inches in diameter. Found only in New South Wales. The wood is of a dark reddish colour and prettily marked. (See No. 3, *Western Australian Collection*.)

## b. Queensland.

The collection of Queensland woods is shown on two shelves in front of the fifth large window and on the table immediately opposite. N.B.—A number of the species are also common to New South Wales. (See above.)

On the upper shelf in front of the window observe:—

**No. 1.** SPOTTED GUM (*Eucalyptus maculata*, Hook.). A tree 70 to 90 feet high, and 3 to 4 feet in diameter, with a smooth bark falling off in patches, which gives the trunk a spotted appearance, hence its common name. The tree is chiefly found in New South Wales. The wood is very strong and durable when used in superstructure. (See Nos. 8 and 51, *New South Wales Collection*.)

**No. 2.** BOX (*Tristania conferta*, R. Br.). (See No. 4, *New South Wales Collection*.)

**No. 3.** GREY IRON BARK (*Eucalyptus paniculata*, Sm.). A tree 70 to 90 feet high, and 3 to 4 feet in diameter. It is

moderately common, and the wood is valued for its great strength and durability.

**No. 4. WHITE CEDAR** (*Melia composita*, Willd.). (See No. 75, *New South Wales Collection*.)

**No. 5. BLUE FIG OR ASH**, and sometimes also known as CROO-LOON (*Elæocarpus grandis*, F. Muell.). A tree 90 to 100 feet high and 2 to 3 feet in diameter, found only in Queensland. The wood is soft and easily worked, and is likely to prove serviceable for boarding.

**No. 6. SASSAFRAS** (*Daphnandra micrantha*, Benth.). (See No. 42, *New South Wales Collection*.)

**No. 7. CYPRESS PINE** (*Frenela robusta*, A. Cunn. var. *microcarpa*). A tree 60 to 100 feet high and 2 to 3 feet in diameter. It forms vast tracts along the coast, growing on barren sandy soils, and is found also in New South Wales and Victoria. The wood is somewhat brittle, but is durable, fine grained, fragrant, and takes a high polish. It resists the attacks of white ants, and is used for piles of wharves and for sheathing punts and boats. Though the timber has not received the attention it merits, it is nevertheless an article of great importance in the Colony. The root is also used for cabinet purposes.

On lower shelf are the following:—

**No. 8. RED CEDAR** (*Cedrela Toona*, Roxb.). (See No. 37, *New South Wales Collection*, and No. 22, *Indian Collection*.)

**No. 9. SHE PINE** (*Podocarpus elata*, R. Br.). (See *New South Wales Collection*, No. 83 and p. 51.)

**No. 10. FLINDOSA** (*Flindersia australis*, R. Br.). A robust tree common in the scrubs on the banks of the rivers. The trunk grows to a large size, and is covered with a smooth, scaly, lead-coloured bark. The wood is hard, close grained, very strong and durable. It has long been known to the timber merchants as a very hard wood and difficult to cut with a saw, and for this reason but little attention was for a long time given to it. It is now, however, largely used as a substitute for beech. (See No. 59, *New South Wales Collection*.)

**No. 11. BUNYA BUNYA** (*Araucaria Bidwillii*, Hook.). A tree from 100 to 150 feet high and a diameter of from 3 to 4 feet. It forms a very straight trunk and the bark is thick and smooth. The wood is very strong, even grained, and durable, and sometimes beautifully marked. It is easily worked, and takes a good polish. A fine specimen of the trunk stands in

front of the next window. The seeds are used as an article of food. (See Case 116, *Museum No. 1*, and *No. 589, North Gallery*.)

**No. 12.** LIGHT YELLOW WOOD (*Flindersia oxleyana*, F. Muell.). (See *No. 60, New South Wales Collection*.)

Over the sixth buttress, between the fifth and sixth windows, against the front wall of the building, is a fine slab from an unnamed species of *Eucalyptus*, and on the east end wall over the large Totara slab from New Zealand, is a still finer slab of BLUE GUM of Queensland (*Eucalyptus tereticornis*, Sm.). A tree from 70 to 90 feet high and 3 to 4 feet in diameter. It is one of the most durable woods known, and is very hard and tough, excellent for naves and felloes of wheels and for underground work.

In the angle of the window beneath this specimen is a trunk of MORETON BAY PINE (*Araucaria Cunninghamii*, Ait.). From a plant grown at Kew.

### c. South Australia.

On the left side of the fifth window near the Queensland woods is a specimen of—

**No. 1.** SWAMP GUM (*Eucalyptus Gunnii*, Hook, f.). A large shrub or moderate sized tree, the wood of which is hard, finely figured, and takes a good polish.

In the large central case note specimen of—

**No. 2.** *Fusanus acuminatus*, R. Br. A tall shrub or tree 20 to 30 feet high, furnishing a hard, close, and even grained wood.

At the base of the staircase at the east end of the building observe a flower spike of *Xanthorrhœa semiplana*, F. Muell., measuring 15 feet long.

### d. Victoria.

The collection of Victorian woods consist for the most part of large slabs arranged on the sixth buttress between the fifth and sixth windows, and continued on the back wall of the building immediately opposite and in the two galleries above. The following will be found on the buttress :—

**No. 1.** COORA or NATIVE WILLOW (*Acacia salicina*, Lindl.). A tall shrub or small tree found also in New South Wales,

Queensland, North, South, and West Australia. The wood is hard and heavy, of a fine shade, and adapted for ornamental furniture. The aborigines used to make boomerangs of it.

**No. 2. STRINGY BARK** (*Eucalyptus obliqua*, L. Her.). A tree from 100 to 250 or even 300 feet high, growing also in New South Wales, South Australia, and Tasmania. The wood is straight and even grained, hard and durable, and is largely used for building purposes. (See *Tasmania Collection*, pp. 71 and 72, and No. 15.)

**No. 3. WOOLLY BUTT** (*Eucalyptus longifolia*, Link. and Otto.). A tall tree found also in New South Wales. The wood is hard, straight grained, and easily worked. It is used for spokes of wheels and is well adapted for furniture. (See No. 12, *New South Wales Collection*.)

**No. 4. *Pittosporum undulatum***, Vent. (See No. 82, *New South Wales Collection*.)

**No. 5. WHITE GUM** (*Eucalyptus goniocalyx*? F. Muell.). A moderate sized tree, found also in New South Wales. The wood is straight grained, very hard, and is used for building purposes as joists, beams, rafters, &c., as well as for staves for casks.

**No. 6. BEECH OR TASMANIAN MYRTLE** (*Fagus Cunninghamii*, Hook.). A tree growing to a height of 200 feet and a diameter of 13 feet. It is found abundantly in Tasmania, and some very fine specimens are exhibited in the Tasmanian collection. (See Nos. 8 and 16.) The wood is of a brownish, satiny appearance, marked with beautiful feathery cross veins; it takes an excellent polish and is well adapted for cabinet work.

**No. 7. BLACKWOOD** (*Acacia melanoxylon*, R. Br.). A large timber tree, growing also in New South Wales, South Australia, and Tasmania. The wood is very even grained, easily worked, of a dark brownish colour, often beautifully marked and highly valued for furniture. One of the most valuable timbers found in the whole of Australia, an excellent substitute for American Walnut. (See No. 12, and No. 10, *Tasmania Collection*.)

**No. 8. NATIVE MYRTLE** (*Eugenia Smithii*, Poir., syn. *Acmena floribunda*, DC.) Mostly a slender tree, but sometimes attaining a height of 120 feet, found also in New South Wales, North Australia, and Queensland. The wood is very hard and heavy but little used, as most myrtaceous timbers except Eucalypts are liable to dry rot.

**No. 9. SWAMP TEA TREE** (*Melaleuca squarrosa*, Sm.). A shrub usually from 6 to 10 feet high, but sometimes growing



to the height of a good sized tree, found also in New South Wales, South Australia, and Tasmania. The wood is very hard, heavy, and difficult to work. The bark is in thin papery layers.

**No. 10. MOUNTAIN CYPRESS PINE** (*Frenela rhomboidea*, Endl., syn. *Callitris rhomboidea*, R. Br.). A tree described as ranging from 20 to 25 feet high, but in favourable situations attaining to 60 or 80 feet. It is found also in New South Wales, South Australia, and Queensland, and a variety in Tasmania. The wood is easily worked, finely marked, and takes a good polish.

**No. 11. BLACK WATTLE** (*Acacia decurrens*, Willd., var. *mollis*, syn. *A. mollissima*, Willd.). A handsome tree growing also in New South Wales, South Australia, and Tasmania. The wood is much used for cask staves, treenails, &c. (See No. 18 and No. 4, *Tasmania Collection*.)

On this buttress note a fine slab, or counter top of JARBAH (*Eucalyptus marginata*, Sm.), from Western Australia. A wood of great strength and durability. (See other specimens at east end of building, Nos. 2, 8, and 10, *Western Australian Collection*.)

The Victorian Collection is continued on the back wall.

**No. 12. BLACKWOOD** (*Acacia melanoxydon*, R. Br.). (See No. 7 and No. 10, *Tasmania Collection*.)

**No. 13. SHE OAK** (*Casuarina stricta*, Ait.). A small or moderate sized tree, growing also in New South Wales, South Australia, and Tasmania. The wood is very hard and heavy, but beautifully figured and adapted for furniture and cabinet work. (See No. 23 and No. 14, *Tasmania Collection*.)

**No. 14. RED GUM** (*Eucalyptus rostrata*, Schlecht.). A large tree found also in New South Wales and South Australia. The wood is very hard, compact, and especially durable, suitable for shipbuilding and other strong work.

**No. 15. NATIVE CHERRY** (*Exocarpus cupressiformis*, Lab.). A tree from 20 to 40 feet high, found also in Queensland, New South Wales, South and West Australia, and Tasmania. The wood is hard, close grained, and durable, and suited for furniture and cabinet work.

**No. 16. IRON BARK** (*Eucalyptus leucoxydon*, F. Muell.). A moderate sized or tall tree growing chiefly on quartz ranges in Victoria, and found also in New South Wales and South Australia. The wood is of a brownish colour, strong, and very

durable, and is used for axe and hammer handles, spokes of wheels, &c.

**No. 17. BLACKBUTT** (*Eucalyptus pilularis*, Sm.). A tree usually of moderate size, but sometimes attaining a great height. (See *New South Wales Collection*, p. 51.)

Near the doorway, on the angle of the eighth buttress is a trunk of a Tree Fern (*Dicksonia antarctica*, Labil.), from Ballarat (See *New South Wales Collection*, p. 52), and in the left-hand corner of the eastern window is a fine trunk of *Alsophila australis*, R. Br. (See *New South Wales Collection*, p. 52.) The specimen was obtained from the London International Exhibition of 1873, and was cut into lengths for convenience of transport from Victoria. Its entire height when put together is 50 feet.

The collection is continued in the galleries immediately above.

**No. 18. *Acacia decurrens*, Willd. (Wattle).** (See No. 11.)

**No. 19. *Acacia homalophylla*, A. Cunn. (Myall).** A tree about 30 feet high, and about a foot in diameter, it grows also in New South Wales and South Australia. The wood is of a rich deep brown colour, even-grained and easily worked, and emits, when freshly cut, a strong fragrance resembling violets. It is valued for cabinet purposes, and in this country is used for making tobacco pipes. (See Case 39, *Museum No. 1.*)

**No. 20. *Acacia leprosa*, Sieb. (Hickory).** A tall shrub or small tree with a slender stem, found also in New South Wales. The heartwood is of a reddish brown, takes a good polish, and is used for furniture.

**No. 21. *Atherosperma moschata*, Lab. (Sassafras).** A large tree, common also in beech forests throughout Tasmania. The wood has a dark centre, and is often beautifully marked, it takes a good polish, and is used for cabinet work.

**No. 22. *Angophora lanceolata*, Cav. (Apple Tree).** A tree of considerable size found also in Queensland and New South Wales. The wood is hard and heavy, and is used for fuel. (See No. 16, *New South Wales Collection.*)

**No. 23. *Casuarina stricta*, Ait. (She Oak).** (See No. 13, also No. 14, *Tasmania Collection.*)

**No. 24. *Eucalyptus odorata*, Behr. (Peppermint).** A small or moderate sized tree with a dark grey, rough, persistent bark, native also of South Australia. The wood is

hard and not easily worked. The leaves yield an essential oil, but not in large quantity.

**No. 25.** *Frenela robusta*, A. Cunn., var. *verrucosa*, syn. *Callitris verrucosa*, R. Br. (Desert Cypress or Sandarac Pine). (See No. 63, *New South Wales Collection*.)

**No. 26.** *Myrsine variabilis*, R. Br. (See No. 76, *New South Wales Collection*.)

**No. 27.** *Olearia argophyllu*, F. Muell. (Muskwood). A tree 20 to 30 feet high, emitting a strong musky smell. It is found also in New South Wales and Tasmania. The wood is of a brownish yellow colour, and very finely figured when cut from the gnarled butt, which in this species is very large. It takes a good polish, and is highly valued for cabinet work. (See pp. 70 and 71 and No. 19, *Tasmanian Collection*, and *North Gallery*, No. 761.)

Observe a specimen of **Violet Wood** or **Myall**, probably the produce of *Acacia pendula*, A. Cunn. (See No. 23, *New South Wales Collection*.)

## e. Western Australia.

At the east end of the building in front of the window and on either side will be found the following woods from Western Australia.

**No. 1.** **TOUART** (*Eucalyptus gomphocephala*, DC.) The tree grows to 150 feet high but seldom exceeds 100 feet. The wood is of a pale yellowish colour, very heavy, with a close twisted grain and not liable to split if properly seasoned. It is used for shafts, the naves and felloes of wheels and for ship-building.

**No. 2.** **CURLY JARRAH** (*Eucalyptus marginata*, Sm.). A finely marked specimen of this valuable wood. Jarrah is one of the most durable woods of the Eucalypti, and has been much used of late for paving roads in London and other large towns. (See Nos. 9 and 10, also p. 67.)

**No. 3.** **NATIVE PEAR** or **WOODEN PEAR** (*Xylomelum pyriforme*, Knight). (See No. 99, *New South Wales Collection* and p. 75.)

**No. 4.** **RASPBERRY JAM WOOD** (*Acacia acuminata*, Benth.) The common name is derived from the scent of the wood being similar to that of raspberries. It is of a dark reddish brown

colour, close grained and hard, and is much used for fence posts in the Colony on account of its durability.

**No. 5. KARRI** (*Eucalyptus diversicolor*, F. Muell.). A very large tree, growing sometimes to a height of 400 feet. The wood is of a dark colour, hard, heavy, strong, and tough. It is much used in the Colony for spokes and felloes of wheels, rails, and shipbuilding generally. It is described as being very durable under the effects of alternate drought and wet. The log here exhibited was exposed on the shore in Flinders Bay, W. Australia, between high and low water for 42 years. (See No. 11.)

**No. 6. MORRELL** (*Eucalyptus macrocarpa*, Hook.). A tree growing principally near the sources of the Swan River. The wood is very hard and is used chiefly for shafts and wheelwrights' work.

**No. 7. WANDOO** (*Eucalyptus redunca*, Schau.). A tree sometimes 120 feet high and 17 feet in diameter. The wood is of a light colour, remarkably hard, heavy, and durable, and is much used for building purposes, wheelwrights' work, &c.

**No. 8. JARRAH** (*Eucalyptus marginata*, Sm.). (See Nos. 2 and 10 also p. 67 and *Museum No. 1, Case 48.*)

**No. 9. SWAMP OR RIVER BANKSIA** (*Banksia verticillata*, R. Br.) A small tree, the wood of which is beautifully marked and used for cabinet work and boat-building.

**No. 10. JARRAH** (*Eucalyptus marginata*, Sm.). This fine log contains 148 cubic feet and weighs 4 tons 16 cwt. (See Nos. 2 and 8.)

**No. 11. KARRI** (*Eucalyptus diversicolor*, F. Muell.). (See No. 5.) Observe in the right-hand corner of the tenth window a block of West Australian Sandal-wood (*Fusanus spicatus*, R. Br.), a tree about 30 feet high, the wood of which is fragrant and is sent in large quantities from West Australia to China.

## f. Tasmania.

The collection of Tasmanian woods is distributed on the front, back, and end walls of the building, as well as in the galleries. In front of the fifth large window are two ship's knees, one of HUON PINE (*Dacrydium Franklinii*, Hook. f.), and the other of STRINGY BARK (*Eucalyptus obliqua*, L'Her.). Above these is a fine slab of MUSKWOOD (*Olearia argophylla*, F. Muell.). (See No. 19 and No. 27, *Victoria Collection.*)

On the left side of the seventh buttress adjoining observe (**No. 1**). Plank of BLUE GUM (*Eucalyptus Globulus*, Lab.). A tree from 100 to 350 feet high, and 8 to 10 feet in diameter, abundant in the southern and western parts of the island, and found also in Victoria. The wood is very strong and durable, and is largely used in ship and house-building, for bridges piles, wharves, &c. (See No. 3, also Museum No. 1, Case 48, and North Gallery, Nos. 720 and 725.)

Adjoining this plank is a very fine slab of HUON PINE (*Dacrydium Franklinii*, Hook. f.) (**No. 2**). A tree averaging 60 to 80 feet high, though sometimes growing to 100 feet. It is confined to Tasmania. The wood is of a light yellow colour, very beautifully marked with dark wavy lines and small knots; it takes a good polish, and is well adapted for choice cabinet work. It is much used in Tasmania for carving and for bedroom furniture. A similar slab is shown on the other side of the buttress, both specimens being framed in BLACKWOOD (*Acacia melanoxylon*). A very choice specimen of HUON PINE is also shown on the back wall of the building, on the left side of the black case. (See No. 5.) A cabinet chiefly made of this wood is shown at bottom of staircase Museum No. 1. On the front of the buttress (**No. 3**) is a large plank of BLUE GUM (See No. 1), and above it a small specimen of finely figured STRINGY BARK (*Eucalyptus obliqua*, L'Her.) (See No. 15 and No. 2, Victoria Collection.) On the wall over the buttress is a specimen of MUSKWOOD. (See No. 19 and No. 27, Victoria Collection), and over the small window to the left is another specimen of BLUE GUM, and in the window recess is a block of STRINGY BARK, which contains 12,960 cubic inches, and weighs 518 pounds. Here is also, on the right hand, a portion of a joist of BLUE GUM from beneath the floor of the Old Court House at Hobart, and on the left observe a Tree Fern trunk (*Alsophila australis*, R. Br.). (See New South Wales Collection, p. 52, and Victoria Collection, p. 68.)

On the back wall, on the left side of the black case, observe:—

**No. 4.** BLACK WATTLE (*Acacia decurrens*, Willd., var. *mollis*, syn. *A. mollissima*, Willd.) (See Nos. 11 and 18, Victoria Collection.)

**No. 5.** HUON PINE (*Dacrydium Franklinii*, Hook. f.). See No. 2. Under the black case, on the floor is a block of TASMANIAN MYRTLE (*Fagus Cunninghamii*, Hook.). (See Nos. 8 and 16, and No. 6, Victoria Coll.) It contains 3,120 cubic

inches, and weighs 110 pounds. On the right-hand side of the case note a specimen of the wood of PEPPERMINT (*Eucalyptus amygdalina*, Lab.). A tree growing often to 100 or 150 feet high, and a diameter of from 3 to 8 feet. It grows, however, to a much greater height in Victoria, where trees have been measured 400 and 470 feet. (See Museum No. 1, Case 47 and North Gallery, Nos. 777 and 786.) The wood is very hard and durable. Adjoining this specimen is a piece of BLUE GUM. (See No. 1.)

Observe on the wall the following:—

**No. 6. SILVER WATTLE** (*Acacia dealbata*, Link.). A handsome tree 60 to 120 feet high. The bark is somewhat white, and the foliage of a silvery green colour. The tree occurs also in New South Wales and Victoria. The wood is used for cask staves, treenails, and for turnery purposes, and the bark is sometimes used for tanning, but will not tan sole leather. A gum of inferior quality is exuded by the tree. (See No. 9.)

Next to this is a small slab of Tasmanian SATIN WOOD, the botanical source of which is unknown.

**No. 7. NATIVE PEAR** (*Hakea acicularis*, R. Br., var. *lissosperma*). A tall shrub or small bushy tree from 20 to 30 feet high and 8 to 10 inches in diameter, found also in New South Wales and Victoria. The wood is hard, and used for turnery purposes.

**No. 8. MYRTLE** (*Fagus Cunninghamii*, Hook.). A remarkably fine specimen of this beautiful wood. (See No. 16 and No. 6, Victoria Collection.) The frame is of Huon Pine.

On the floor in front are two blocks, one of BLACKWOOD (*Acacia melanoxylon*) and the other of WHITE GUM, probably from *Eucalyptus viminalis*, Lab., the former contains 3,120 cubic inches and weighs 121 pounds.

On the left side of the east window, between it and the staircase, are two slabs of STRINGY BARK (*Eucalyptus obliqua*, L'Her.); one measures 25 feet long and the other 19 feet 6 by 3 feet 6 broad. (See No. 15 and No. 2, Victoria Collection.) On the right-hand side of east window near the front wall observe a fine slab of BLACKWOOD (*Acacia melanoxylon*, R. Br.) measuring 20 feet long by 1 foot 7 inches broad. (See No. 10 and No. 7, Victoria Collection), and another of NATIVE MYRTLE (*Fagus Cunninghamii*, Hook.), 23 feet long and 1 foot 5 inches broad. At the base of these behind the door is a large ship's knee of BLUE GUM (*Eucalyptus Globulus*, Lab.), and

Near this is a block of the same wood containing 7,680 cubic inches and weighing 336 pounds.

The Tasmanian woods are continued in the galleries.

**No. 9.** *Acacia dealbata*, Link. (Silver Wattle). This is a panel composed of two fine slabs of the wood framed with BLACKWOOD. (See No. 6.)

**No. 10.** *Acacia melanoxylon*, R. Br. (Blackwood). Three fine panels in the lower gallery immediately over the black case. One shows a figured form of the wood. Two are framed with HUON PINE. Near these is a small slab exhibiting a fine straight grain, and in the gallery above is a half round panel of fine wavy BLACKWOOD framed with STRINGY BARK; two other specimens are also shown in the Upper Gallery, and a small ship's knee of the same wood. (See also long slab on end wall, pp. 72, and No. 7, Victoria Collection.)

**No. 11.** *Athrotaxis selaginoides*, Don. (Cedar of Tasmania). A tree of about 45 feet high. The wood is of a light yellowish colour, straight, and even grained. Presented by Sir William Denison.

**No. 12.** *Banksia marginata*, Cav. (Honeysuckle). Usually a bushy shrub 10 to 15 feet high, but sometimes growing to a height of from 20 to 40 feet. It is found also in New South Wales, South Australia, and Victoria, and obtains the name of Honeysuckle from the quantity of honey contained in the flowers. The wood is hard, of a reddish colour, and fine figure, and is adapted for cabinet work.

**No. 13.** *Bedfordia salicina*, DC. (Dogwood). Mostly a shrub from 12 to 14 feet high, but sometimes growing to 25 feet; found also in Victoria. The wood is close grained, of a brownish colour, often beautifully marked and well adapted for ornamental cabinet work. A second specimen is shown over the small window in the Upper Gallery.

**No. 14.** *Casuarina stricta*, Ait. (She Oak). A panel of this fine wood framed with Huon Pine is shown in the Lower Gallery. (See Nos. 13 and 23, Victoria Collection.)

**No. 15.** *Eucalyptus obliqua*, L'Her. (Stringy Bark). A fine burr or knot is shown in the large central case. (See pp. 71 and 72, and No. 2, Victoria Collection.)

**No. 16.** *Fagus Cunninghamii*, Hook. (Native Myrtle). A panel framed in Huon Pine is exhibited in the Lower Gallery, and two smaller pieces in the gallery above. (See No. 8 and No. 6, Victoria Collection.)

**No. 17.** *Leptospermum lanigerum*, Sm. (Tea Tree). A tall erect shrub, but sometimes growing to a small tree, found also in New South Wales, South Australia, and Victoria. The wood is of a light colour, hard, and even grained.

**No. 18.** *Notelaea ligustrina*, Vent. (Iron Wood). A tall shrub, or small tree sometimes attaining a height of 30 feet, found also in Victoria. The wood is extremely hard and close grained, with a dark mottled centre like Olive wood. It is used for mallets, sheaves of blocks, turnery, &c.

**No. 19.** *Olearia argophylla*, F. Muell. (Muskwood). Three fine panels of this wood framed with Blackwood and Huon Pine are shown in the Lower and Upper Galleries; for other specimens, see pp. 70 and 71, and No. 27, Victoria Collection.

**No. 20.** *Phyllocladus rhomboidalis*, Rich. (Celery Topped Pine). A slender tree attaining a height of 60 feet. The wood is even grained and easily worked, used chiefly for masts and spars for ships.

**No. 21.** *Pittosporum bicolor*, Hook. (White Wood). A small tree growing in some localities to a height of 40 feet, found also in Victoria. The wood is white, even grained, used in turnery and has been suggested for wood engraving.

In front of the building before the eighth window observe a group of GRASS TREES (*Xanthorrhæa quadrangulata*, F. Muell.), singular plants belonging to the *Juncaceæ* or Rush family, natives of South Australia. One of these plants flowered in the Royal Gardens, Kew, in 1873. The flowers of the *Xanthorrhæas* are borne on slender spikes often 3 or 4 feet long, starting from among the crown of leaves at the summit of the stem. The arboreous species are known in Western Australia and Western South Australia as BLACK BOYS, in consequence of the fancied resemblance of the trunk and flower spike at a distance to a native holding a spear. A large quantity of a reddish coloured resin is deposited on the stem, known as GRASS TREE GUM. (See North Gallery, No. 741.)

In the corner, near the staircase, is a fine specimen of another species (*X. australis*, R. Br.), from Victoria, and near the group of Grass trees is a similar group of plants of *Kingia australis*, R. Br., the stems of which often grow several feet in height. It is closely allied to *Xanthorrhæa*, and is found only in West Australia. (See North Gallery, Nos. 709, 737, 741, 756, and 764.) In the centre of the large east window, above the ship's knee, is a stem of *Cycas media*, R. Br. It is



found in North Australia and Queensland, and grows to a height of from 8 to 10 feet, or sometimes to twice that height. On the right-hand side of the window observe a fine trunk of *Livistona humilis*, R. Br., a Palm, native of North Australia.

In front of the seventh buttress observe a small Sideboard which belonged to Francis Bauer, Botanic Painter to Kings George III. and IV., and Queen Victoria. It is made of the woods of *Xylomelum pyriforme*, Knight, and *Banksia* sp.

### g. New Zealand.

This collection consists of some fine planks of woods suitable for structural or building purposes, and some choice specimens of an ornamental character adapted for cabinet work. They are shown partly on the back and end walls, on the buttress on the left-hand side on entering the door, and in the Lower and Upper Galleries immediately opposite the door.

Adjoining the Tasmanian Woods, under the Lower Gallery, observe:—

**No. 1. MAIRE** (*Olea* sp., probably *O. Cunninghamii*, Hook. f.). A lofty tree, producing a very hard wood used by wheelwrights and for mill machinery. (See No. 22.)

**No. 2. KAURI PINE** (*Agathis australis*, Steud., syn. *Dammara australis*, Lamb.). A tree 120 feet, or even sometimes 200 feet high, and a diameter of 10 to 20 feet at the base. It is the finest forest tree in New Zealand. The wood is very strong and durable, and is highly esteemed for masts, spars, deck, and other planking of vessels, as well as for house-building. Kauri timber has been removed from old houses in a perfectly sound condition after being exposed for 20 or 30 years, and it has also proved very durable for railway sleepers. It is not, however, suitable for piles for wharves or bridges, as it is liable to attack by teredo. The wood is sometimes richly mottled or figured, a fine example of which is shown close to this specimen, and a much finer one in the Lower Gallery immediately above. (See Nos. 7, 15, and 16.)

A large quantity of resin is afforded by this tree, known as Kauri or Cowdi resin. It is found in large masses buried in the ground where no trees now exist, and is used for varnish making. (See Case 115, *Museum* No. 1.)

**No. 3. TAWHAI** (*Fagus Solandri*, Hook. f.). A lofty, beautiful evergreen tree, 100 feet high, and 4 to 5 feet in

diameter. It is known in Nelson as WHITE BIRCH, and in Wellington as BLACK BIRCH. The wood is hard and very durable, and well adapted for fencing, piles, and for bridges in fresh water, but in marine situations it is usually attacked by teredo. The bark is used for tanning.

**No. 4. RATA** (*Metrosideros robusta*, A. Cunn.). A tree 60 to 100 feet high, and 5 to 12 feet in diameter. The wood is hard, very dense, and durable. Used for railway waggons, shipbuilding, and similar purposes.

**No. 5. REWA REWA** (*Knightia excelsa*, R. Br.). A lofty, slender tree, 100 feet high, similar in habit to a Lombardy poplar. The wood is usually considered of a perishable character when exposed to the weather, but is much valued for cabinet purposes, and for inlaying. Mr. Kirk says [Report on the Durability of New Zealand Timbers, 1875,] "that although nearly valueless at present it might be advantageously exported if sawn into planks from 3 to 6 inches in thickness and dried in airy sheds. From its liability to become 'foxy' it would be useless to ship it unseasoned as it would become worthless during the voyage. I am convinced that if once fairly established in the London market the demand would speedily exceed the supply, so that good prices would be realised. At present thousands of trees are destroyed yearly with the progress of clearing, so that its utilization in any way would be of great advantage as it is a timber, even when dry, of difficult combustion, it might be advantageously used for certain special purposes irrespective of its beauty." (See No. 20 and p. 78.)

**No. 6. HINAU** (*Eleocarpus dentatus*, Vahl.). A small tree, common throughout the Colony. The wood is of a light dull brown colour, very tough, strong, and durable, much valued for fencing posts, rails, sleepers, and similar work in exposed situations. (See No. 19.)

**No. 7. MOTTLED KAURI** (*Agathis australis*, Steud., syn. *Dammara australis*, Lamb.). (See Nos. 2, 15, and 16.)

**No. 8. TOTARA** (*Podocarpus Totara*, A. Cunn.). A tree 60 to 70 feet high, averaging 4 to 6 feet in diameter, but occasionally found from 8 to 10 feet. It is the most valuable wood in New Zealand, and is more generally used than any other timber. For piles of marine wharves, bridges, &c. it is invaluable, as it resists the attacks of teredo for a considerable period. (See pp. 77 and 78, and No. 26.)

**No. 9. RIMU or RED PINE** (*Dacrydium cupressinum*, Soland.). A tree from 40 to 80 feet high and 3 to 5 feet in diameter. Widely spread throughout the Colony. The wood is largely used for building purposes, but it is liable to decay under the influence of wet. "Its great strength, and the facility with which straight logs of large dimensions can be obtained, enable it to be used with advantage for heavy beams, girders, &c. under cover." (See Nos. 13 and 18.)

**No. 10. WHITE TEA TREE** (*Leptospermum? ericoides*, A. Rich.). A shrub or tree 40 or 50 feet high, with a trunk 1 to 2 feet in diameter. The wood is hard and dense, and is much used for house blocks, fencing rails, and is especially valued for piles for jetties, wharves, &c.

**No. 11. TARAIRE** (*Beilschmiedia Tarairi*, Benth. and Hook. f., syn. *Nesodaphne Tarairi*, Hook. f.) A tree 60 to 80 feet high and 1 to 2 feet in diameter. The wood is hard and compact, and takes a good polish, and could be utilised for cabinet work, but is not durable in exposed situations.

**No. 12. MATAI or BLACK PINE** (*Podocarpus spicata*, R. Br.). A tree 80 feet high and 2 to 4 feet in diameter, abundant throughout the Colony. The wood is very durable and is used for a variety of purposes, such as piles for bridges, wharves, and jetties, bed plates for machinery, millwrights' work, house blocks, railway sleepers, house-building, &c.

**No. 13. RIMU** (*Dacrydium cupressinum*, Soland.). (See Nos. 9 and 18.)

In the angle of the building is a portion of a trunk of **SILVER PINE** of New Zealand, the botanical name of which is unknown.

To the right hand of the large end window observe a fine plank of **TOTARA** (*Podocarpus Totara*, A. Cunn.). It measures 16 feet 9 by 3 feet 8 inches in diameter. (See Nos. 8 and 26, and p. 78.) Observe also (**No. 14**) a portion of a trunk of **KOHUTUHUTU or FUCHSIA** (*Fuchsia excorticata*, Lin. fil.). A large bush or small tree, 10 to 30 feet high with a trunk sometimes 3 feet in diameter, and covered with a ragged papery bark. The wood is said to contain much tannic and gallic acids, and to be very durable, house blocks of the timber having been in use in Dunedin for more than 20 years were found upon examination to be sound and good.

Close to the wall, at the back of the staircase between the two Tasmanian planks of Stringy bark, is a trunk of a New Zealand Tree Fern (*Dicksonia squarrosa*, Swartz). It grows

to a height of from 10 to 20 feet, and is abundant throughout the northern and middle islands. Another specimen is shown in the angle of the building behind the staircase.

Immediately behind the ship's knee from Tasmania, in the front angle of the building, observe a much warted trunk with a fibrous bark, probably a species of *Leptospermum*, and near this, quite in the angle, is a stem of *Rhopalostylis Baueri*, W. & D., a palm of Norfolk Island.

On the eighth buttress to the right hand of exit door observe (No. 15), a large plank of KAURI PINE (*Agathis australis*, Steud., syn. *Dammara australis*, Lamb.) It measures 15 feet 3 inches long, and is 4 feet 8 inches wide. (See Nos. 2, 7, and 16.)

On the other side of the buttress is a plank of KAHIKATEA or WHITE PINE (*Podocarpus dacrydiodes*, A. Rich.). A tree from 100 to 150 feet high, and 4 feet in diameter. Abundant throughout the Colony, frequently forming extensive forests in swampy districts. The wood is white and tough, and well adapted for indoor work, but will not bear exposure. In Wellington and other places it is said to be subject to the attacks of a minute coleopterous insect, but this is perhaps the case only when the timber is felled in the summer time, and used in an unseasoned state. (See No. 24.)

In the recess of the small window on the top of the block of Tasmanian Stringy Bark is a finely marked piece of TOTARA (*Podocarpus Totara*, A. Cunn.). (See Nos. 8 and 26.)

In the Lower Gallery, opposite the exit door, observe a table top made of finely selected pieces of Totara wood bordered with New Zealand HONEYSUCKLE (*Knightia excelsa*, R. Br.). (See Nos. 5 and 20.)

The remainder of the New Zealand Collection is contained in the galleries, many of the specimens are furnished by trees already described, but they are retained in consequence of their difference in grain or figure, or other qualities to recommend them.

**No. 16.** (*Agathis australis*, Steud., syn. *Dammara australis*, Lamb. (Mottled Kauri). (See Nos. 2, 7, and 15.)

**No. 17.** *Beilschmiedia Tawa*, Benth. and Hook. f. (Tawa). A forest tree 60 to 70 feet high, and 1 to 2 feet in diameter. The wood is compact and even grained, suitable for furniture, but not durable in exposed situations.

**No. 18.** *Dacrydium cupressinum*, Soland. (Rimu or Red Pine). (See Nos. 9 and 13.)

**No. 19.** *Elæocarpus dentatus*, Vahl. (Hinau). (See No. 6.)

**No. 20.** *Knightia excelsa*, R. Br. (Rewa Rewa). (See No. 5 and p. 78.)

**No. 21.** *Libocedrus Bidwillii*, Hook. f. (Pahautea or Cedar) or *L. doniana*, Endl. (Kawaka). There is some doubt about the identification of this wood with either of the two species of *Libocedrus* found in New Zealand. The wood of the first named has been described as soft and worthless, and of the second as excellent for planks and spars. Mr. Kirk [Report on the durability of New Zealand timbers], however, says of *L. Bidwillii*, that it is a close grained timber of great durability, and of *L. doniana*, that there is "little doubt that it will prove equally durable with its congener *L. Bidwillii*."

**No. 22.** *Olea Cunninghamii*, Hook. f. (Blac Maire). A tree averaging 40 feet, producing a wood of great density, extreme hardness and durability. (See No. 1.)

**No. 23.** *Phyllocladus trichomanoides*, Don. (Tanekaha). A straight, handsome tree, 50 to 60 feet high. The wood is close grained, strong, and very durable, especially in moist situations, consequently it is much used for railway sleepers, bridges, planks, spars, &c. The bark is used for dyeing and tanning.

**No. 24.** *Podocarpus dacrydioides*, A. Rich. (Kahikatea or White Pine). (See p. 78.)

**No. 25.** *Podocarpus ferruginea*, Don. (Miro or Black Pine). A tree 50 to 80 feet high and 3 feet in diameter. The wood is of a reddish colour, close grained, and durable, especially in situations where it is exposed to the effects of sea-water, as piles for jetties, piers, &c.

**No. 26.** *Podocarpus Totara*, A. Cunn. (Totara). A remarkably fine specimen is shown in the Lower Gallery. (See also No. 8 and pp. 77 and 78.)

**No. 27.** *Tetranthera calicaris*, Hook. f. (Mangeao). A small evergreen tree, seldom exceeding 40 feet in height, the wood of which is close grained and tough. Used for ships' blocks, &c.

**No. 28.** *Vitex littoralis*, A. Cunn. (Puriri). A tree 50 to 60 feet high and 3 to 5 feet in diameter. The wood is extremely strong and very durable, and is extensively used for fencing posts, piles for bridges, railway sleepers, &c.

## h. Fiji Islands.

The whole of this Collection is contained in the galleries and consists of the following woods:—

**No. 1.** *Acacia Rickii*, A. Gray (Qumu). A tree producing a hard and durable wood, suitable for cabinet work and furniture.

**No. 2.** *Afzelia bijuga*, A. Gray (Vesi). A moderate sized evergreen tree. The heartwood is of a reddish brown colour, extremely hard and close grained. It is used for clubs and a variety of purposes where strength and durability are required. (See Museum No. 1, Case 36.)

**No. 3.** *Agathis vitiensis*, Benth. and Hook. f., syn. *Dammara vitiensis*, Seem. (Dakua). A tree closely allied to the *Kauri* of New Zealand and yielding a very similar timber, valued for its even grain and durable quality.

**No. 4.** *Alphitonia excelsa*, Reiss., syn. *A. franguloides*, A. Gray (Doi). A tall tree with a hard, close grained wood valued for general carpentry work. (See No. 25, New South Wales Collection.)

**No. 5.** *Alstonia vitiensis*, Seem. (Drega quruquru). Wood even grained, and light coloured with brown streaks.

**No. 6.** *Barringtonia* sp. (Vutukaloa). A hard, prettily marked dark brown wood. The species cannot be identified.

**No. 7.** *Bischofia javanica*, Blume (Koka damu). A tree 30 to 40 feet high. The wood is of a dark red colour, hard and close grained. Used for pillars in house-building.

**No. 8.** *Calophyllum Burmanii*, Wight (Damanu). A tree yielding a valuable close grained wood. Useful for house building. It is one of the best timbers in the Colony.

**No. 9.** *Calophyllum inophyllum*, L. (Dilo). An evergreen tree, the wood of which is of a reddish brown colour, hard and close grained, and suitable for cabinet work. (See No. 4, Seychelles Collection.)

**No. 10.** *Carapa moluccensis*, Lam. (Dabi). A moderate sized tree. The wood is hard, of a whitish colour but turning red on exposure. It is used for furniture.

**No. 11.** *Cinnamomum pedatinervium*, Meisn. (Masou). A tree about 30 feet high with an aromatic cinnamon-like bark. The wood is soft and of no great value.

**No. 12.** *Citrus* sp. (Moliwai). This is an undetermined species about the uses of which nothing has yet been said.

**No. 13.** *Couthovia corynocarpa*, A. Gray (Olo or Boloa). A tree, the wood of which is described as being hard and valuable.

**No. 14.** *Dacrydium elatum*, Wall. (Daku Salusalu). A lofty pyramidal tree with spreading branches and weeping branchlets. It produces a good sound and valuable timber.

**No. 15.** *Dracontomelum sylvestre*, Blume (Tarawan Ki Coge). A tree producing a hard but coarse grained wood of a deep brownish red colour.

**No. 16.** *Eugenia effusa*, A. Gray (Yasi). A tree growing to a height of 80 feet, furnishing a hard and durable timber.

**No. 17.** This is the wood of another species of *Eugenia*, and has been described as *E. speciosa*, but cannot at present be further identified.

**No. 18.** *Eugenia Jambos*? L. (Sea). This species is a moderate sized tree widely distributed in tropical countries. The vernacular name *Sea* appears to be applied to *E. Richii*, A. Gray, so that there is some doubt as to the accurate identity of this specimen with *E. Jambos*.

**No. 19.** *Fagraea berteriana*, A. Gray (Bua). A middle sized tree producing a light coloured moderately hard wood.

**No. 20.** *Hibiscus tiliaceus*, L. (Vau). A much branched tree, common to the tropics of both hemispheres. The wood is light and soft, but tough. Used for boat timbers, knees, &c.

**No. 21.** *Lumnitzera coccinea*, Wight and Arn. (Sigali). A glabrous bushy shrub or small tree producing a hard, heavy wood, very durable in water, and not liable to the attacks of insects. It is much valued for piles.

**No. 22.** *Morinda citrifolia*, L. (Kura). A small tree with a straight trunk. The wood is of a yellow colour, close grained and suitable for turning, the bark is used by the natives to dye their dresses.

**No. 23.** *Myristica grandifolia*, A. DC., syn. *M. macrophylla*, A. Gray (Mali). The wood of this tree is even grained, of a light colour streaked with broad pinkish lines.

**No. 24.** *Nephelium pinnata*, Forst. (Dawa). A tree growing to a height of 60 feet, producing a hard and very useful timber for furniture.

**No. 25.** *Parinariium laurinum*, A. Gray (Makita). A tree 50 feet high. The wood is very hard, durable, and tough, and is used for spars for canoes. (See *Museum No. 1, Case 42.*)

**No. 26.** *Pittosporum Richii*, A. Gray (Fadiri). A tree producing a close-grained hard wood, used for general carpentry.

**No. 27.** *Podocarpus cupressina*, R. Br. (Kau tabua). A tree 50 to 80 feet high. The native name indicates the yellowish tinge of the wood, which is even grained and moderately hard.

**No. 28.** *Pongamia glabra*, Vent. (Vesivesi). A moderate sized tree growing near the beach. The wood is hard and close grained, and bears some resemblance to Vesi (*Afzelia bijuga*). (See No. 2.) In India, however, where the tree is also found, the wood is not durable and is readily eaten by insects, but is improved by seasoning in water.

**No. 29.** *Premna taitensis*, Schauer (Yaro). A tree producing a very durable wood used for house-building.

**No. 30.** *Pterocarpus indicus*, Willd. (Cibicibi). A lofty tree distributed through India, the Malay Islands, Philippines, and China. It is commonly known as Andaman Redwood, in consequence of the dark red colour of its wood. (See p. 12, and No. 51, *Indian Collection*.)

**No. 31.** *Rhizophora mucronata*, Lam. (Dogo). A mangrove, growing in swamps but producing a hard and durable wood. The sap is of a blood red colour, and is much employed by the natives for dressing their hair.

**No. 32.** *Serianthes vitiensis*, A. Gray (Vaivai). A tree producing a tough but light wood, considered the best wood in Fiji for boat planks.

**No. 33.** *Terminalia Catappa*, L. (Tavola). A large tree, furnishing a good durable wood of a reddish colour, but with light sapwood. It is used for various purposes by the people of Fiji, especially for drums called Lali.

**No. 34.** *Trichospermum Richii*, Seem. (Maku). A tree producing a soft open-grained wood.

**No. 35.** *Trophis anthropophagorum*, Seem. (Malavaci). A moderate sized tree. Wood soft and open-grained, the heartwood streaked with dark brown.

The remaining specimens of woods from the Fiji islands it has not been possible yet to identify scientifically. Their native names are as follows:—Baluwai, Bau, Calavia, Mavota, Mawamawa, Mena, Rautu Rourou, Uru, Vocea, Vuna, and Waciwaci.

Down the centre of the building are glazed cases and swinging frames containing mounted photographs, &c. The contents of the first glazed case opposite the entrance (south-western) door is described at p. 7.

Next to this case is another, showing on the one side a series illustrating the manufacture of violins at Munich, and



on the other the manufacture of children's toys for Noah's arks, as carried on in Saxony. It will be seen that the rough design of the animal required for representation is first turned in a circular piece of wood by the lathe; sections are then cut out and finished by hand.

Close to this is a stand with swinging frames containing a large and important collection of plans, prints, drawings, photographs, &c., illustrating the history and development of the Royal Gardens, Kew. These are continued in a corresponding stand at the farther end of the building, together with photographic and other views in the several botanic gardens of Europe and Asia, and illustrative groups of the vegetation of different parts of Europe, India, Africa, America, West Indies, and Australia.

Near the first-named stand is a glazed case containing a well executed model of an Indian indigo factory. (*See Museum No. 1, Case 29.*)

The adjoining screen contains a few specimens of woods from Seychelles described at p. 29, some from the Cape of Good Hope described at p. 31, some from Dominica described at p. 41, and others from Trinidad described at p. 42.

Next to this screen are two glazed cases, one containing a fine specimen of the bark of the Mammoth tree of California (*Sequoia gigantea*, Torr., syn. *Wellingtonia gigantea*, Lindl.), also specimens of the wood and cones, and photographs of some of the oldest trees, and the other containing a model in boxwood of a two-decker, constructed in the early part of the reign of George III., carrying 44 guns; also two specimens of boxwood, one from Soukoum Kale, on the Black Sea, and the other from a tree grown in the Royal Gardens, Kew. Boxwood is very largely used for engraving, shuttles, rules, and various other purposes. (*See Museum No. 1, Case 93.*)

The large case next to these contains specimens of woods which are referred to in this Guide under the countries to which they belong.

Note also in this case a Zulu piano, or musical instrument from the Transvaal, made of pieces of resonant wood with gourds to increase the sound.

In the centre of the building is a stand with swinging frames containing a set of diagrams illustrating the natural orders of Flowering plants, prepared by Prof. Oliver for the Science and Art Department, South Kensington; also a series of diagrams illustrative of the structure of Cryptogamic plants, by Messrs.

Zippel and Bollmann. On the top of this stand, under a glass shade, observe a relic of Herne's Oak, blown down in Windsor Forest, August 31, 1863, presented by Her Majesty the Queen.

Close to this is a bust of George III., copied in 1837 by Chantrey from a bust made in 1771 by Bacon.

In the large case adjoining is exhibited an extensive collection of Bamboo products from Japan, presented by Charles Holme, Esq., F.L.S. It illustrates some of the numerous uses to which these gigantic grasses are applied in that country. Some remarkably fine examples of native ingenuity in working the bamboo are shown both in this and in the last case opposite the exit door, in which the collection is continued.

The next case contains models in cork of a ship, of the town of Fribourg in Switzerland, and of the Queen's Cottage, Kew.

Next this is a screen upon which is hung an elevation and plans of the Temperate House, in the Royal Gardens, and near it a glazed case containing a series of plants belonging to various natural families illustrating the Flora of the Karroo region, South Africa, where the climate is one of great dryness and extremes of heat and cold.

The adjoining stand with swinging frames is a continuation of the Kew series of engravings and photographs and views in Foreign and Colonial Botanic Gardens before referred to.

On the back wall nearly opposite this stand is a case containing a model of a Singapore Gambier Factory, together with implements used in boiling the leaves and twigs of the plant (*Uncaria Gambier*, Roxb.); and preparing the Gambier for market for use in tanning. (See *Museum No. 1, Case 58.*)

In the angle formed by the sixth window and the seventh buttress, observe a portion of a trunk of the Fiji Sandalwood (*Santalum Yasi*, Seem.).

On the ceiling is a representation of *Amorphophallus Titanum*, Becc., a gigantic aroid, native of Sumatra, presented to the Museum by the Marchese Corsi of Florence.

In front of the Lower Gallery is arranged a series of photographs of the lake and mountain scenery of the island of Grenada, taken by R. V. Sherring, Esq., F.L.S.

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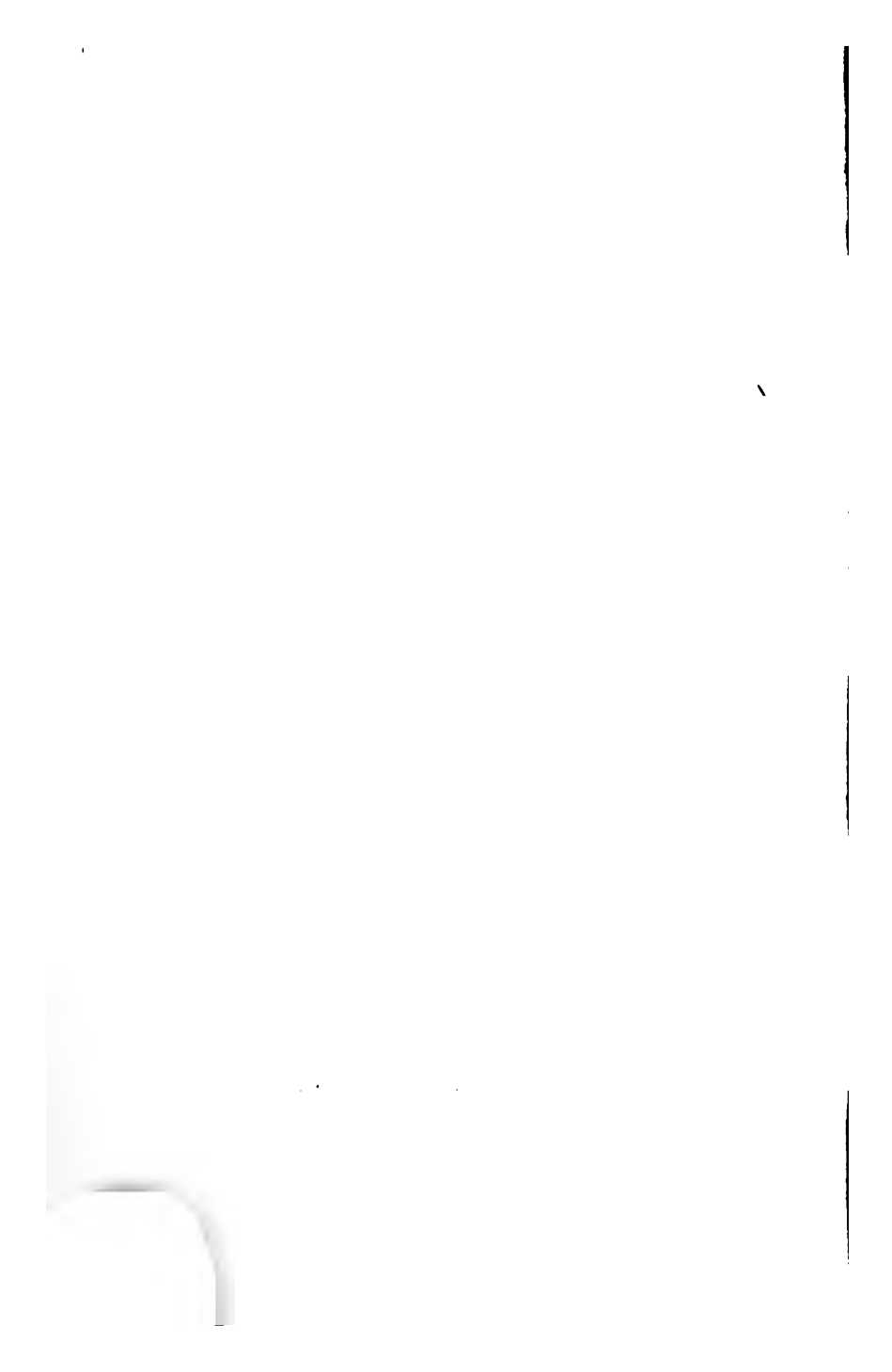
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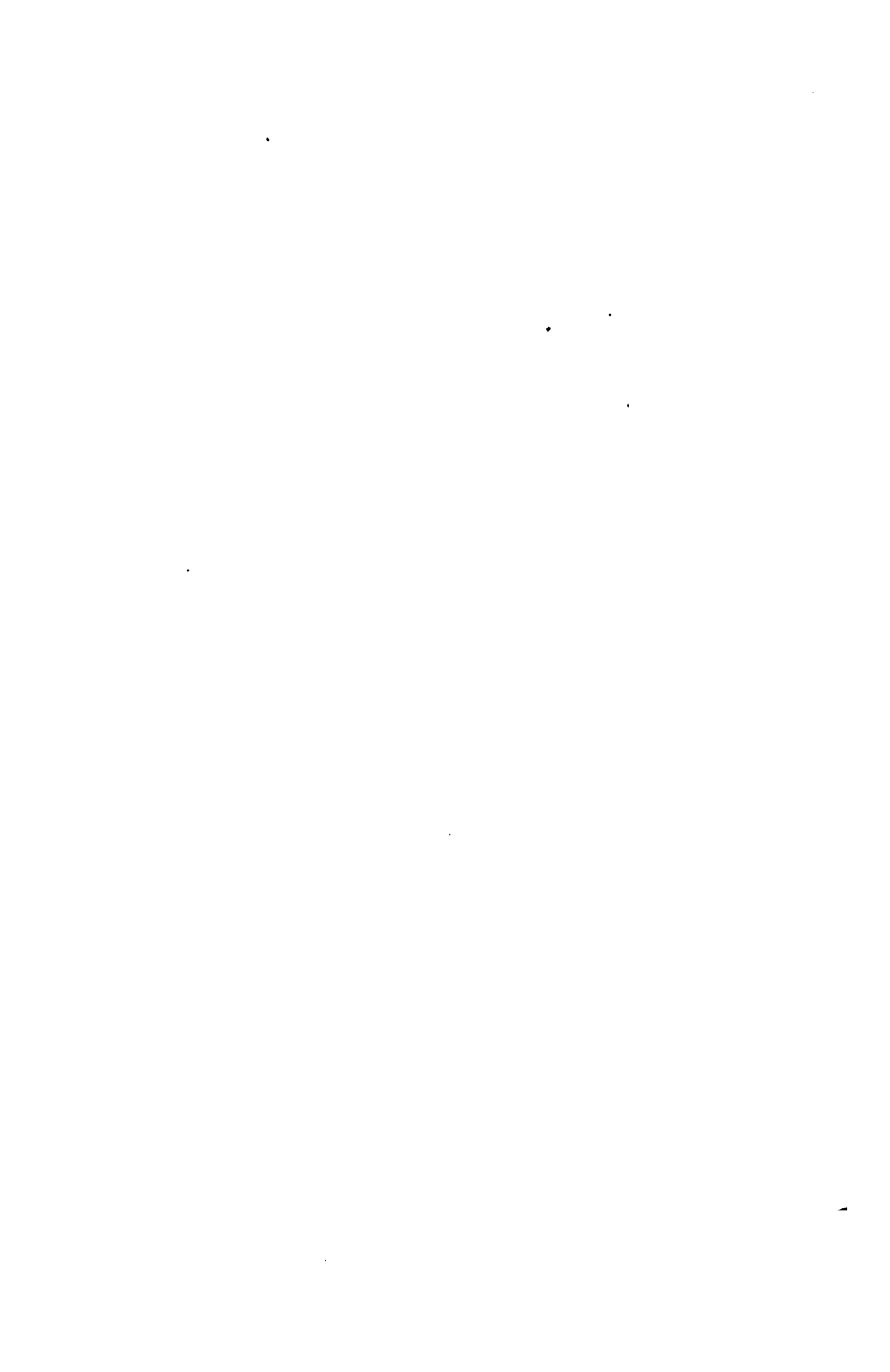












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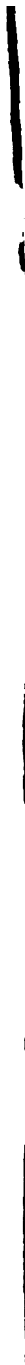






















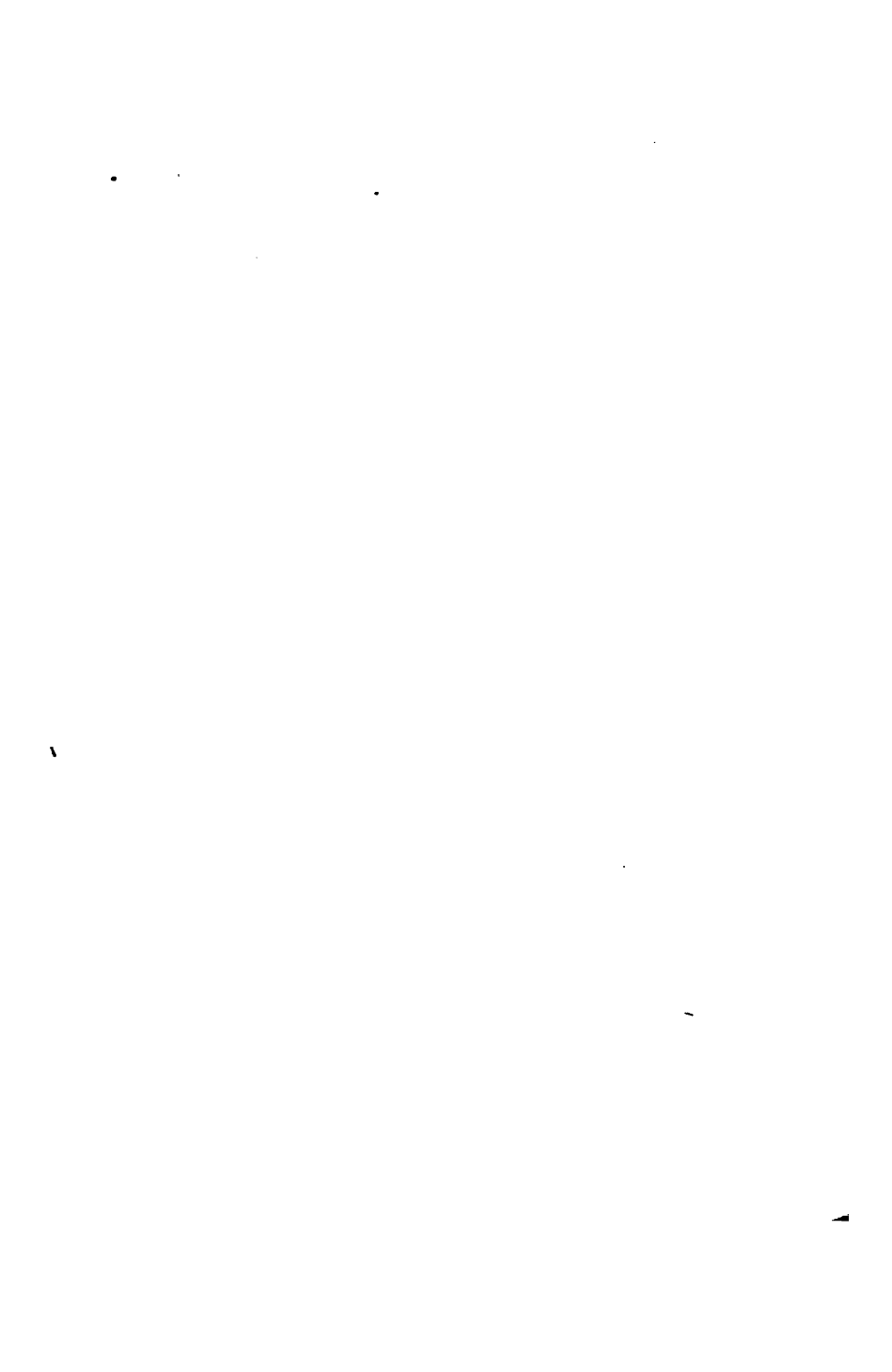


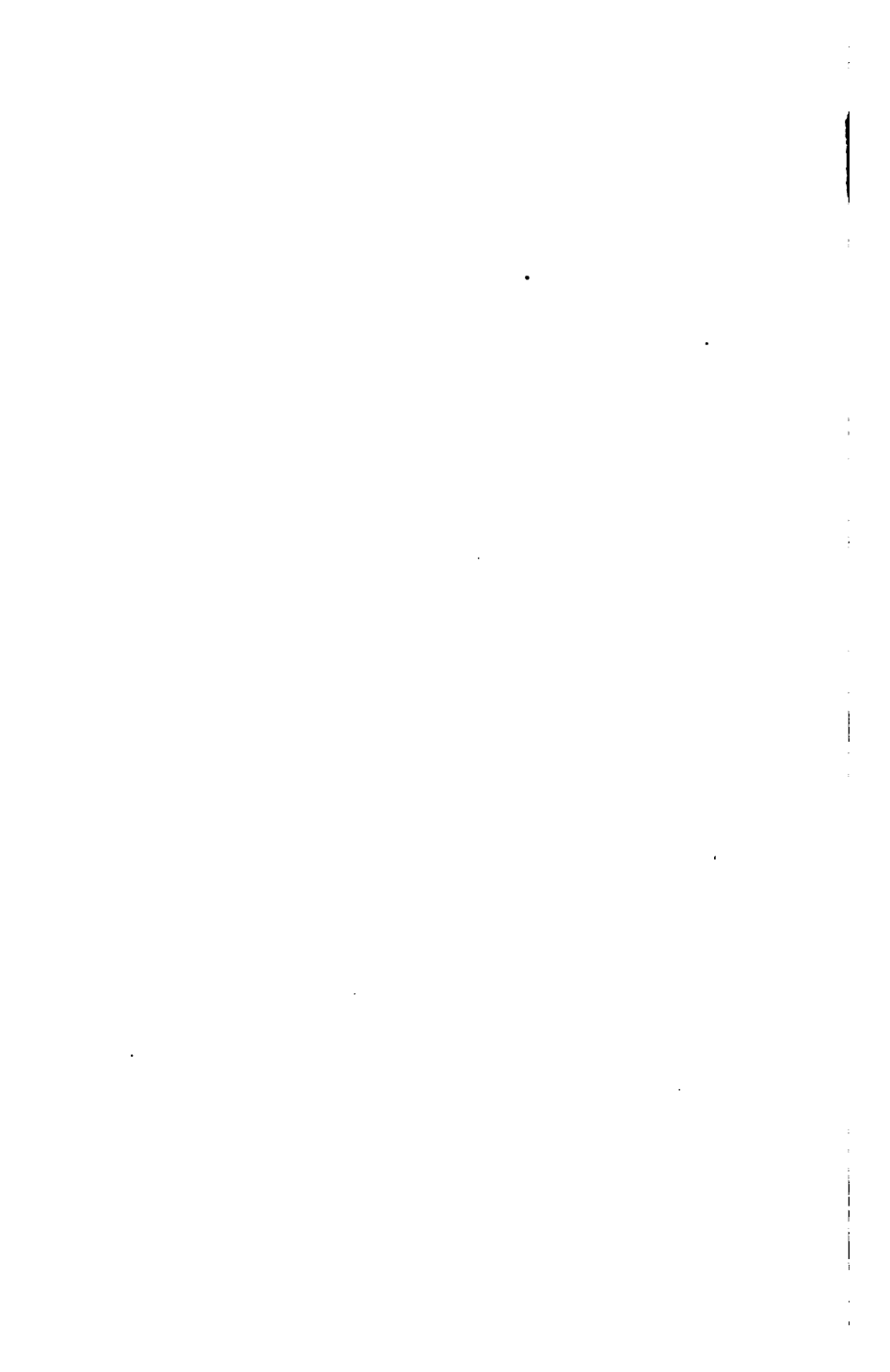




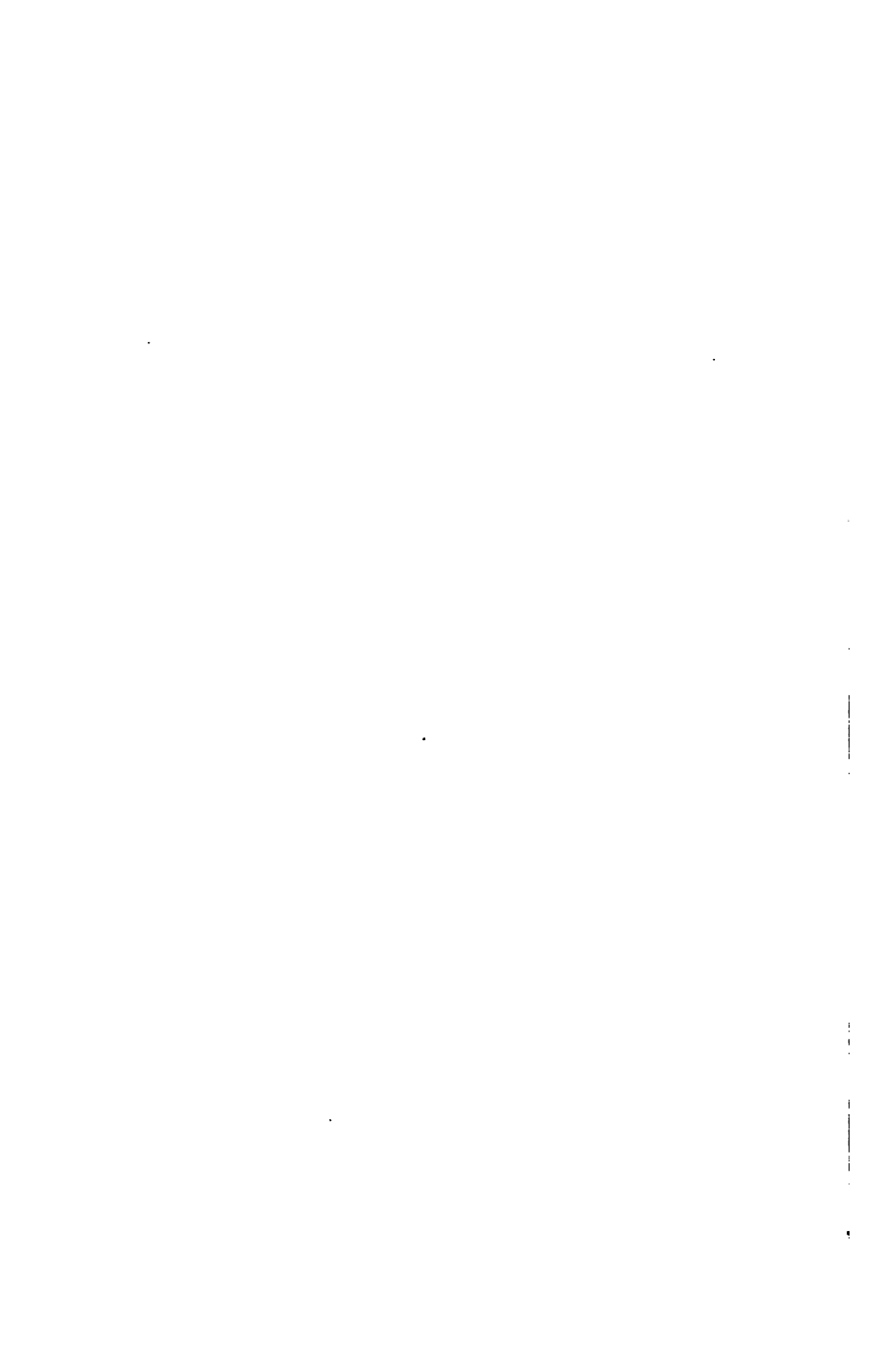






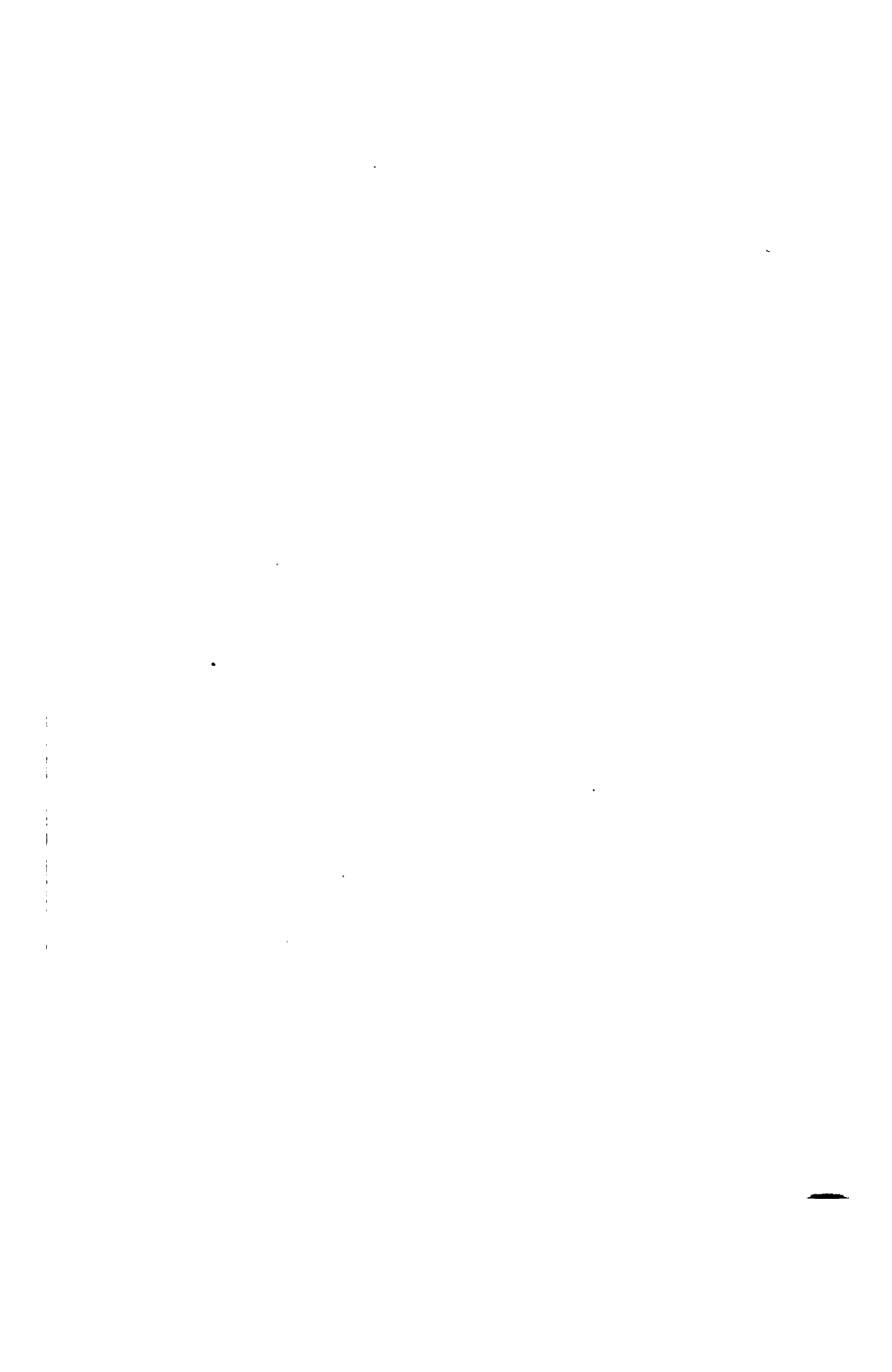










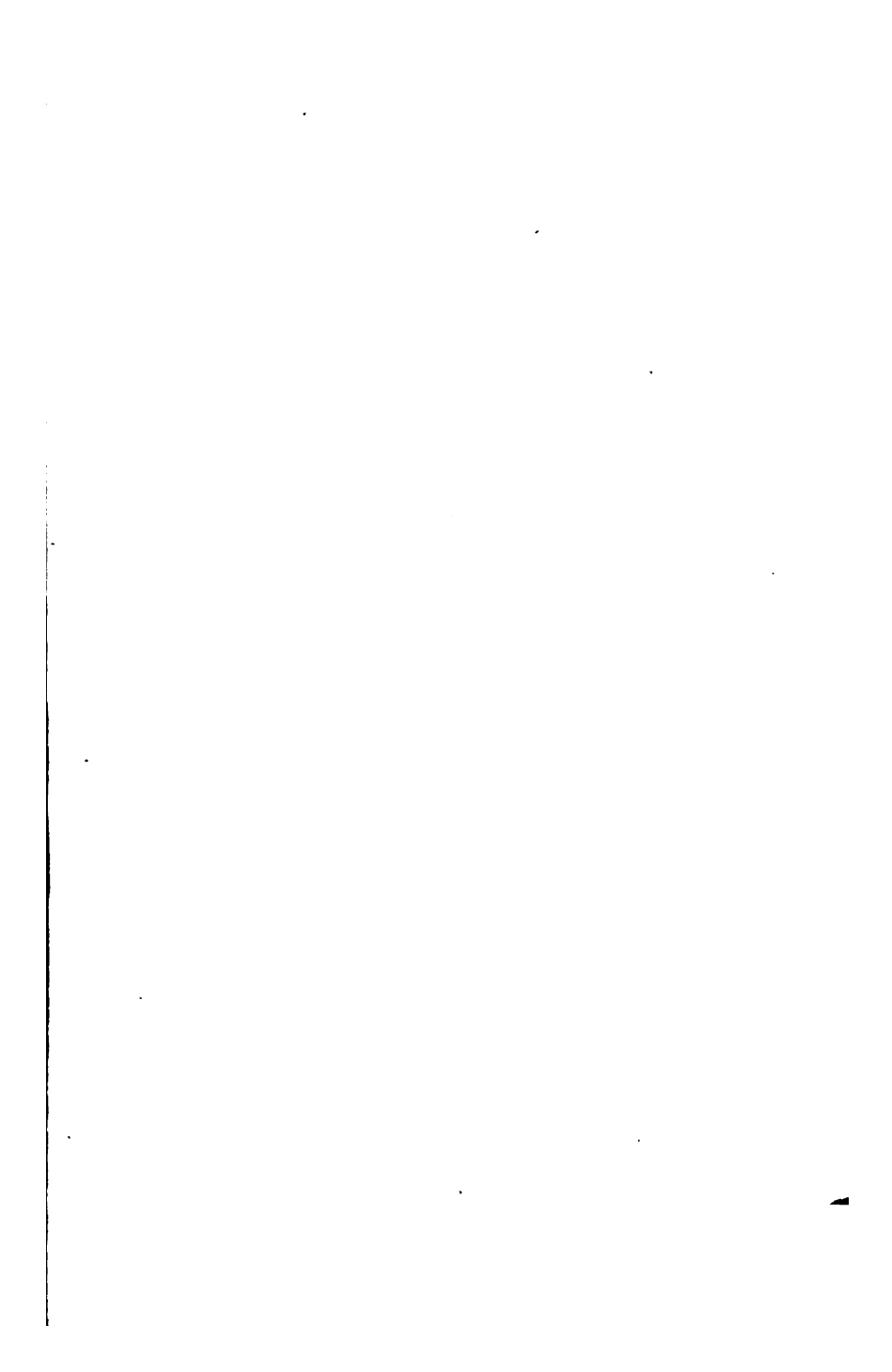


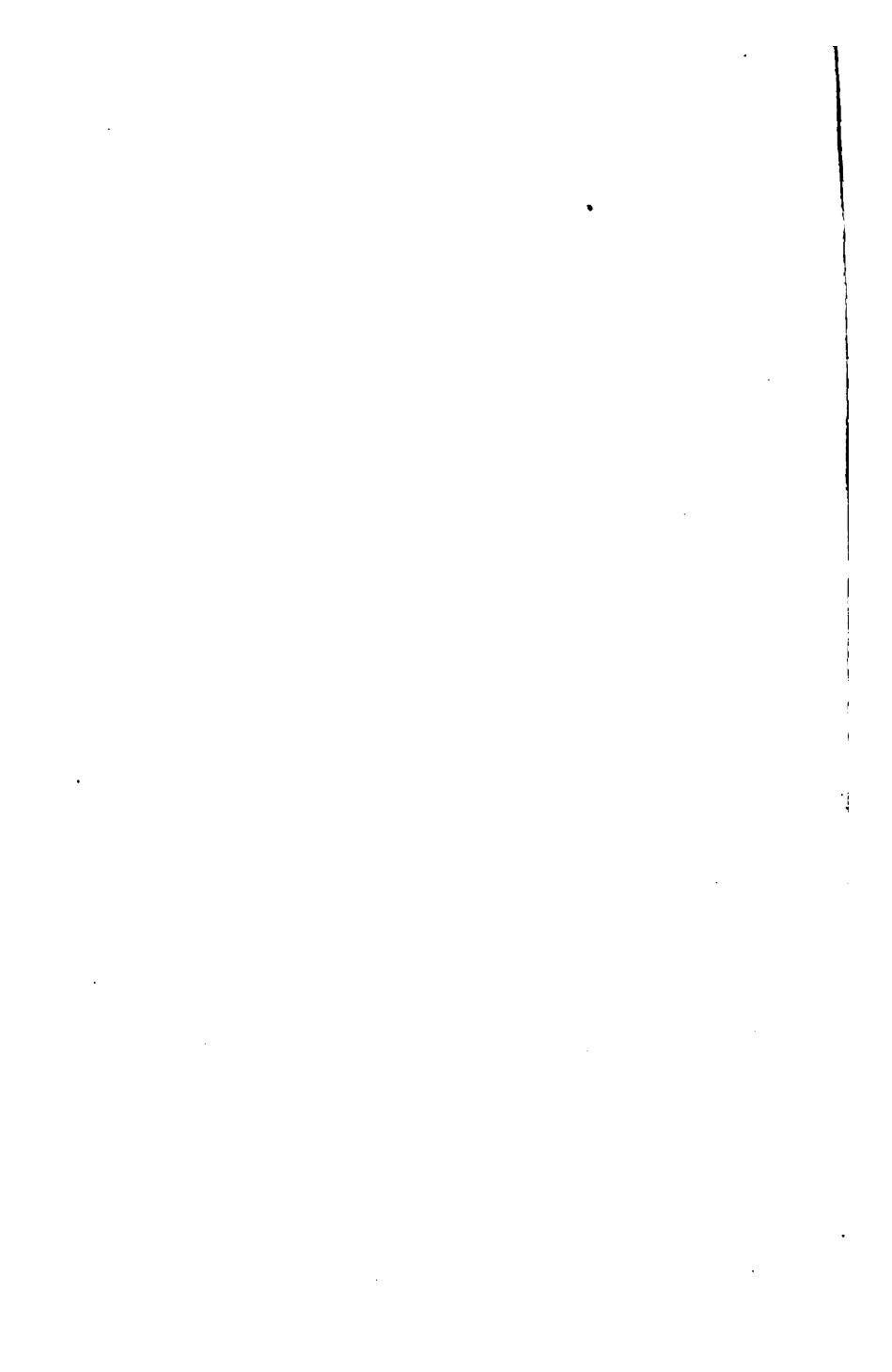


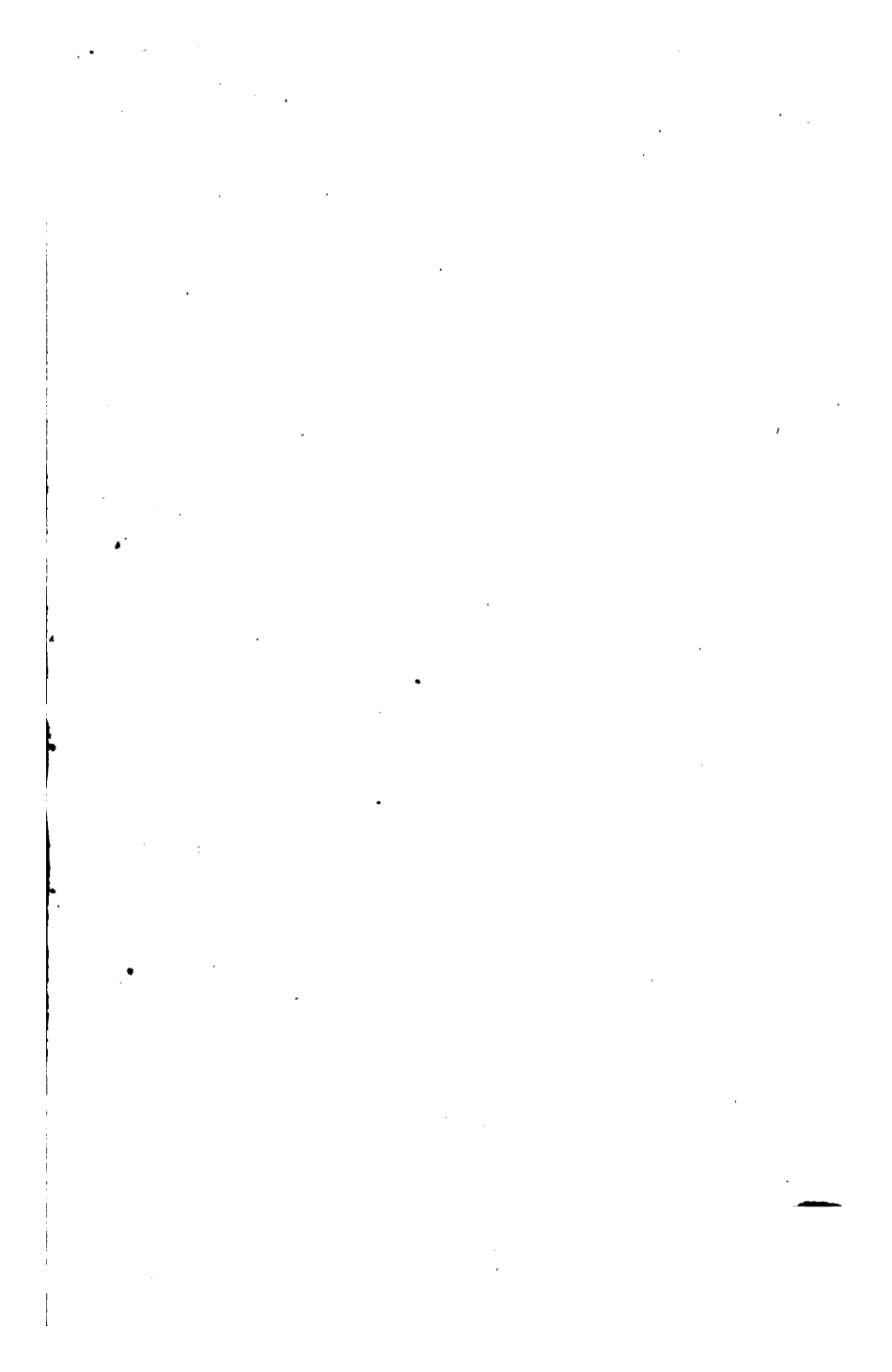












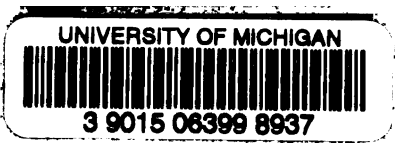




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